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METEOROLOGICAL OFFICE
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THE MARINE OBSERVER

Ship "Hotspur."
Capt. H. Toynbee

Admiral R. Fitzroy C.B. R.N.
1854 — 1865

Captain H. Toynbee
1867 — 1888

Lieut. C. W. Baillie R.N.
1888 — 1899

Captain M. Campbell Hepworth C.B. R.D. R.N.R.
1899 — 1919

VOL. XIV
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APRIL
1937

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CAPTAIN L. A. BROOKE SMITH, R.D., R.N.R., MARINE SUPERINTENDENT.

·C·H·W·

M.O. 262

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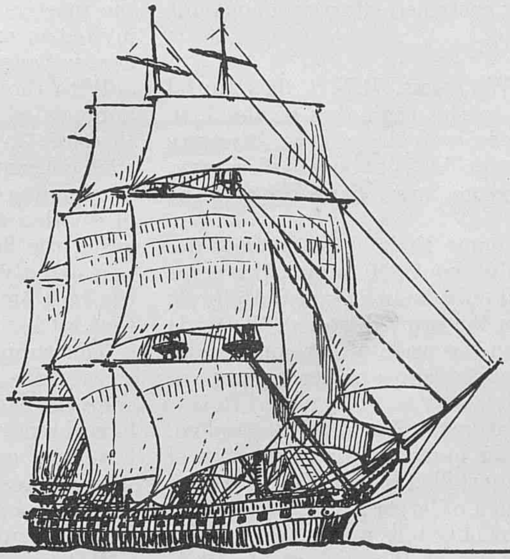

VOL. XIV, No. 126.

THE MARINE OBSERVER.

APRIL 1937.

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WHAT'S IN A NAME

Tradition means much and to the Merchant Navy it really means more than is often realised. Indeed if the value of the tradition of our great service were taken by those who do not belong to it as we too often lightly speak of it among ourselves, it would be of little value.

In the last number, Commander M. Cresswell, R.N.R., by quite a brief sketch of the history of the Royal Naval Reserve, traced from early times, showed how the great tradition of His Majesty's Senior Auxiliary Defensive Service—the R.N.R. falls in on the left of the Royal Navy only—has been built up by sustained effort and constant improvement.

What a tradition to uphold !

In this number, Commander C. H. Williams, R.N.R., has traced the ships named *Discovery* right back to the beginning of the 17th century. With such a tradition, the Officers in the present *Discovery* have a great reputation to maintain. Their efforts not only in discovery, observation and survey, but also in rescue work have ornamented the pages of this journal.

It is often asked why certain lines name their ships as they do. Looking through the Fleet List with only about 350 names, the name of most ships in it, tells the story if you only knew it, not only by its style, the line she belongs to (apart from the printed words), the trade in which she is usually engaged, but also the pride of her commander and ship's company and owners in what the ships of her name have achieved.

Take one of the smaller ships at present in the Fleet List at random, *Paris* in the Cross Channel Service. Her name conjures up years of fine service in peace and war and of highly skilled seamanship of a kind particularly admired by deep water seamen of larger ships. Of typical cargo liners the name *Clan McTavish* not only tells a story of years of peaceful trade but a ship of her name is one of those which has made history of the defensive powers of British merchant ships.

In the Western Ocean the name *Britannic* has belonged to fine ships whose service has been great.

Of mail ships, names have been passed on which carry tradition of The Falmouth Packets, John Company, the Blackwell Frigates and others, and every sailor who has been in them when he thinks of this, casts back in his mind to his old ships.

To me the name *Orontes* means more regarding service from 1893 until now, at sea and ashore than anything else, and the present ship is the better for all the others of her name before her, Sailing ships, Troop ships and Mail steamers.

What are we driving at ? What are we trying to do ?

Is it not that we know that the surest and best appeal for good service is to keep ever before the Corps of Voluntary Marine Observers through all the fog and complexity of modern life, with its rush and strain and thirst for knowledge and invention—ashore particularly, cross-currents and under-currents are more trying than any at sea—the need for a proper balance. Steady progress is necessary with suitable adaptation of this new science of meteorology which is in fact a very old art among seamen.

A tradition has been built up in the British Merchant Navy by its work since Admiral FitzRoy and Captain Toynbee organized the work of voluntary observation.

Terms we now use are part of that tradition. " The Regular Observing Ship " is associated with Toynbee's time, and now only those ships which are for the time being in the Fleet List in this journal are thus designated. The " Selected Ship " a ship which forms part of the national complement of voluntary regular wireless telegraphy weather reporting ships of all nations. This term was used by the late Captain Isdale, Marine Superintendent of the British India Steam Navigation Company when he suggested the need for some voluntary regulation of the work to save overlapping and confusion and consequent waste of effort.

Now the number of regular observing ships is maintained between 350 and 360 at all times. This has been found to be the number which can be most effectively maintained. These ships provide maximum volume of written returns of observations which we can deal with and which can be effectively and continuously used.

The past has proved the futility, indeed the folly of keeping ships regularly and constantly at voluntary work returning so great a volume of logged observations that they cannot be effectively dealt with.

With the number of regular observing ships limited to a total of not more than 360 there is provided a nucleus of British Shipping which is a key service for the whole Merchant Navy.

The number of " selected ships " varies with our *proportion* of the world's tonnage, at present this number is 281. Now even if there were continually maintained by all nations 1,000 selected ships, there would be times and regions where there would not be selected ships to make routine weather reports every day. To overcome this, soon after the selected ship scheme was established on the 1st May, 1930, the masters of all British ships fitted with wireless telegraphy were invited to make routine reports in this service *where and when there were not selected ships*. Many do so.

With the advance of time and as the service has grown and been appreciated, the calls upon it have become greater and more exacting, therefore in order that the Observing Fleet shall not be increased, with consequent unnecessary regular work to more British ships and overloading of the work of the Marine Division, a supplementary list of weather reporting ships was commenced in October, 1936, and as I write, the first hundred have been listed.

Now only ships are placed on this list which have been visited by the Port Meteorological Officers and Merchant Navy Agents to ensure that all have had the benefit of suitable advice and instruction.

This supplementary list of weather reporting ships is not published, since in the fullness of time it is hoped there will be few foreign-going ships of over 1,600 tons in the British Merchant Navy which will not have been visited by the Merchant Navy Agents, and whose masters have not undertaken to carry on this voluntary service when and where necessary.

The lists are sent to the Port Meteorological Officers, the Merchant Navy Agents, the Chief Inspector for Wireless Telegraphy at the G.P.O. and the officers-in-charge of certain coast W/T stations, so that where a roll-call for selected ships to report is made, these supplementary weather reporting ships may be included when desirable. At present we are paying particular attention to British shipping navigating the regions of Tropical Revolving Storms where there is comparatively little shipping in the Indian Ocean near Mauritius and in the Pacific, also to the Roaring Forties in the Southern Ocean right round the world. We are also paying particular attention to the more northern trans-North Atlantic routes because of the proposed early development of aerial mail transport across the Atlantic, as well as the special needs of this region for safe navigation and weather forecasting ashore.

A regular service of weather reports from a fair number of ships well spread across the North Atlantic will be a great assistance to these pioneers of the air.

If the early navigators could have had similar information of the currents, the winds, and navigational dangers, how much sooner would navigation have been developed.

If we see this thing in its true sense we shall realise that all will be better off, with due collaboration and co-operation.

The commanders, officers and wireless operators of British supplementary weather reporting ships are already giving assistance in all parts of the world.

For the Eastern North Atlantic the officers in charge of the W/T stations at Malin Head and Valentia make a roll-call for " B " Selected Ships similar to that which we send for " A " Selected Ships through Portishead, and already a large proportion of the ships on these roll-calls are supplementary weather reporting ships.

This is promoting that confidence which is so desirable and for which British " Selected Ships " are now noted the world over.

In order to give as many as possible of the officers of the Merchant Navy opportunity to be members of the Corps of Voluntary Marine Observers, as opportunity occurs and when by doing so the service may be well regulated, supplementary weather reporting ships may be converted to regular observing ships and regular observing ships to supplementary weather reporting ships, the regular observing fleet not exceeding 360 ships.

But it must always be remembered that the first consideration is to detail the most suitable ships, and in this, W/T equipment is important, for carrying out the provision of Article 35 of the Convention for the Safety of Life at Sea.

The main object of the work is to aid navigation.

London. Marine Superintendent.

23rd January, 1937.

The Marine Observers' Log

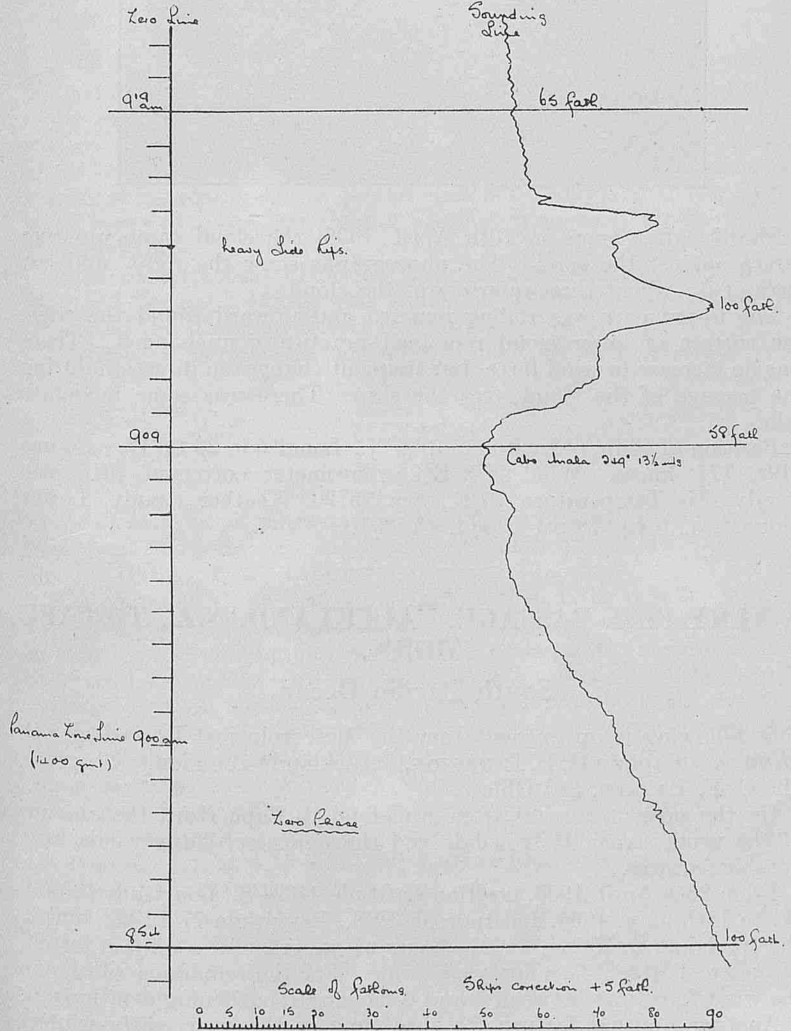
April, May and June.

It is hoped that these pages will be filled each quarter with a selection of the contributions of Mariners in manuscript, or remarks from the Logs and Records of regular Marine Observers. Responsibility for statements rests with the Contributor.

CURRENT RIPS.

Gulf of Panama.

The following is an extract from the Meteorological Record of M.V. *Australia Star*. Captain T. Williams. Auckland to London. Observer, Mr. J. Davis, 2nd Officer.



24th April, 1936. True Course 014°. Speed 17.0 knots. 9.09 a.m. (1409 G.M.T.) Cabo Mala 249° 13½ miles. 9.19 a.m. Cabo Mala 241° 15 miles.

Between 9.09 a.m. and 9.18 a.m. vessel passing through heavy tide rips, extending in a N.E. by E. to S.W. by W. direction, causing vessel to yaw 10° (Automatic Steering). Echo Sounding Machine (Hughes Admiralty Challenger Type) working at time shows definite gully in ocean bed. It is suggested that this gully has bearing on the rips. The diagram is a tracing of the Echo sounding chart.

BROKEN WATER.

Straits of Malacca.

The following is an extract from the Meteorological Record of M.V. *Glengarry*. Captain E. Marriott. Penang to Colombo. Observer, Mr. W. D. Smith, 3rd Officer.

At 0515 G.M.T., 11.55 a.m. A.T.S., on 25th April, 1936, Latitude 5°44′N., Longitude 97° 57′ E., Course 275° 12½ knots. Calm. Excellent visibility. Partly cloudy. Vessel commenced crossing lines of broken water. Belts of broken, choppy water (wavelets about 9 in.–1 ft. in height) about 100–250 feet wide with 500–600 feet of smooth water between successive belts, all absolutely parallel to one another, stretching practically due north and south for as far as the eye could see. The belts were practically straight lines, but in places, identical in each belt, slight curves from the straight were visible. No discoloration of water observed.

0540 G.M.T. Cleared broken water, which thus had a total width of approximately 5¼ miles, and found water on Western side as calm as on Eastern side and as between belts. Vessel slightly more difficult to steer during this time, but not remarkably so. Shortly afterwards light S.S.E. airs sprang up.

MAGNETIC DISTURBANCE.

East Indian Waters.

The following is an extract from the Meteorological Record of S.S. *British Corporal*. Captain J. H. Sloan. Brisbane to Singapore. Observer, Mr. F. S. Hall, 2nd Officer.

28th April, 1936, 1416 at Ship, off Flores Head, Eastern Archipelago, Latitude 08°00′S., Longitude 123°05′E. In the above position, where Admiralty Chart No. 1697 states magnetic disturbance, 1924, observations (azimuths) were taken to ascertain abnormal variations, if any.

Weather was nearly calm and the vessel's deviation or deflecting influence had been constant over the last 36 hours, ship's head S.87°W. magnetic. An azimuth observed at 1416, and checked five minutes later showed the compass error to have changed from $7\frac{3}{4}$°E. to 6°E., a fall of $1\frac{3}{4}$°E. which was the maximum departure observed. Assuming our deviation from the ironwork to have remained constant, then the variation had decreased from $2\frac{3}{4}$°E. as charted to 1°E. Time azimuths at 1510 showed the error again to be $7\frac{3}{4}$°E. and we assumed that the variation had returned to normal.

29th April, 1936, 1700 at Ship. Latitude 08°00′S., Longitude 118°00′E. (approx.) Tamboro Volcano bearing 220° 20 miles. A series of observations were obtained in order to detect magnetic disturbances, one degree was the maximum experienced, the variation falling from 2°E. to 1°E., deviation presumed constant.

DEAD FISH.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Berwickshire*. Captain J. D. MATTHEWS. Liverpool to Cape Town. Observer, Mr. R. A. HARRIS, 2nd Officer.

5th June, 1936, 0855 G.M.T., passed many thousands of fish between 6 and 18 inches in length, lying dead on the surface of the water, over a distance of at least 3 miles on each side of the ship. A sample of the water was taken and found to be entirely free from oil. The average depth of water at this observation was 1,134 fathoms with a small patch of 80 fathoms about 25 miles off. The conclusion arrived at by the Master and Officers, is that this must have been due to some submerged volcanic disturbance in the near vicinity.

Position of Ship—Latitude 25°48′N., Longitude 16°06′W.

A RARE VISITOR.

HOOPOE (UPAPA EPAPS).

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of S.S. *Inanda*. Captain W. H. GIBBINGS. London to Antigua. Observer, Mr. P. B. JONES, 3rd Officer.

This bird was first observed, flying round the ship, resting on the derricks and boats, on the morning of 6th April, 1936, in Latitude 45°25′N., Longitude 16°20′W. Weather at the time was strong E.N.E. breeze, rough sea, fine and partly overcast.

It was caught at 8 p.m. the same evening, Latitude 44°06$\frac{1}{2}$′N., Longitude 19°28′W. During its short period of captivity the bird refused to eat any food and died on 8th April at 6 p.m. On dissecting, the crop and stomach were found to be devoid of any food whatever, the bird being in a most emaciated condition.

PHOSPHORESCENCE.

South African Waters.

THE following is an extract from the Meteorological Log of M.V. *Alynbank*. Captain D. GILLIES. Batavia to London. Observer, Mr. A. C. GLOVER, 3rd Officer.

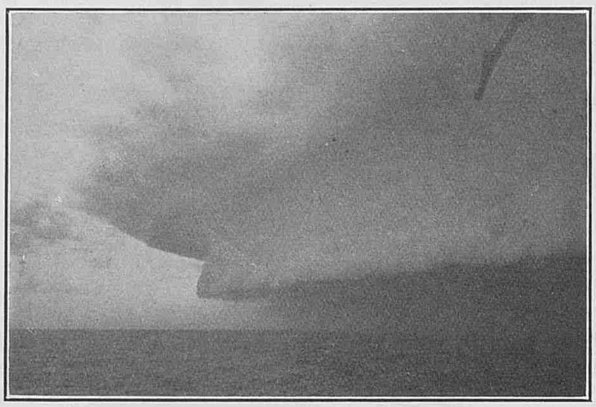
At 2125 A.T.S. 15th June, 1936, the vessel was approaching what appeared to be the loom of a small town in the distance. After steaming two or three miles, however, the vessel entered a large area of phosphorescent sea, which dazzled the eyes considerably, and it was not until 0215 A.T.S. the following morning that the ship finally cleared this area. An interesting feature was when at 2315 A.T.S. a school of porpoises began to follow the ship, the water could almost be imagined as the sky during a severe storm, when stabs of fork lightning are shooting across it, this operation so dazzled the eyes, that it was a relief to retire to the wheel-house to rest them for a while. The phosphorescent area was, therefore, approximately 50 miles long, and although a sample of the water was taken, the density (1025.5) had not altered from the observation of the previous watch, and there appeared nothing unusual upon inspection. The night was clear, and almost cloudless, St.cu. 2/10, with a slight sea, and moderate S.W'ly swell, sea temperature 60°F. The current was afterwards found to be setting 084°; 0.5 knots.

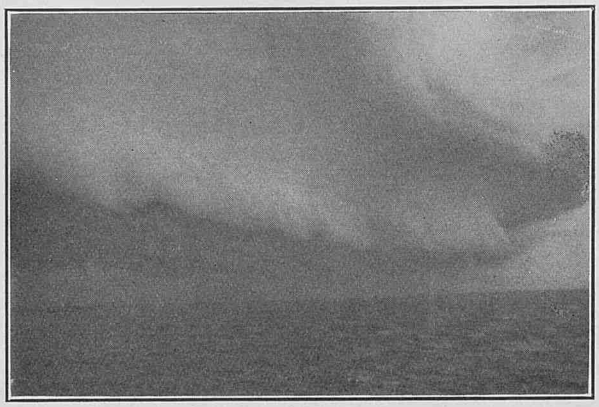
Position of Ship :—Latitude 34°42′S., Longitude 22°05′E. True Course 261°, Speed 10.5 knots.

CLOUD FORMATION.

North Atlantic.

The following particulars have been supplied by Mr. C. C. DINGLE, 3rd Officer of R.M.S. *Asturias*, Captain A. PURVIS. Rio de Janeiro to Madeira.





Shortly after noon on 20th April, 1936, the cloud came up from astern against the wind. The photographs show the right and left ends of it; about three-quarters of the cloud.

The upper part was rolling forward and upward round the edge, the curtain of lower cloud remained practically unchanged. There was no increase in wind force, but frequent changes in direction during the passage of the cloud over the ship. There was some moderate rain.

Position of Ship :—Latitude 15°00′N., Longitude 26°08′W. Course 019°, 17$\frac{1}{2}$ knots. Wind N.N.E.4. Barometer corrected 1015 mb. steady, Air Temperature 75°F., Sea 79°F., Weather cloudy, Lower Cloud, Cu. 5/10, Upper Cloud, Ci. 2/10.

A VERY FINE PASSAGE. AUCKLAND, N.Z., TO CAPE HORN.

South Pacific Ocean.

THE following is an extract from the Meteorological Record of S.S. *Maimoa*. Captain H. P. THURSTON. Auckland to London. Observer, Mr. C. F. PARKER, 3rd Officer.

On the present passage from Auckland to Cape Horn the absence of the usual strong W'ly winds and the lightness of the winds were notable features.

From 26th April, 1936, position Latitude 41°24′S., Longitude 176°00′ W. to 11th May, 1936, Latitude 55°12′S., Longitude 77°12′W., during the 360 hours steaming, for 214 hours we experienced a wind of force 3 or under of which 35 hours were calm. For the remaining 146 hours the wind force was between 4 and 6, never strengthening over force 6.

Another unusual feature for that time of the year (early winter) was the barometer. We did not experience the usual rapid fluctuations so common in these regions and it remained remarkably high, the average being 29.98 in. The air temperature also was never below 41°F.

The track followed was that agreed upon by the principal Companies on that run.

The following is taken from the scrap log.

Direction of Wind.

Calm.	Variable.	N'ly.	N.E'ly.	E'ly.	S.E'ly.	S'ly.	S.W'ly.	W'ly.	N.W'ly.
Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.
35	30	60	27	20	3	48	80	41	16

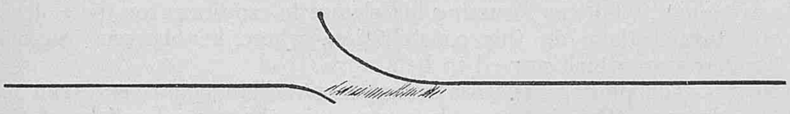
Force of Wind.

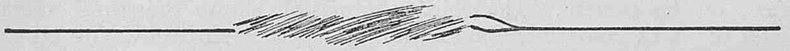
Calm.	1	2	3	4	5	6	Over 6
Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.
35	42	77	60	60	42	44	Nil

ABNORMAL REFRACTION.

South African Waters.

THE following is an extract from the Meteorological Record of M.V. *Opawa*. Captain H. G. B. FIELD. Adelaide to Cape Town. Observer, Mr. T. E. DAVIES, 3rd Officer.





26th April, 1936. This morning refraction was very apparent, distorting the horizon and shipping to the northward. The horizon under the sun, when observed through sextant-shades, resembled the surface of a Shetland wool garment. At other times the horizon broke and one end gently curved downwards whilst the other end turned skywards as shown in the sketches. Shipping to the northward assumed grotesque shapes, varying from solid blocks to rows of tall pillars.

Signs of refraction dispersed later in the forenoon and objects appeared normal. During this time the sky clouded up with cirrus cloud and the breeze increased to N. by E. force 3.

Position of Ship :—Latitude 35°S., Longitude 20°E. (approx.).

MIRAGE.

Red Sea.

THE following is an extract from the Meteorological Record of M.V. *Glengarry*. Captain E. MARRIOTT. Colombo to Suez. Observer, Mr. W. D. SMITH, 3rd Officer.

10th May, 1936, at 7.45 a.m. Ship's Time, 0520 G.M.T., between Daedalus Reef and Brothers Lighthouse what appeared to be a bank of thin haze stretching across the N.W. horizon, its extremities from observer bearing 290°–025°, was observed, on closer inspection, to be a second horizon thrown up 0°09′ above the true horizon. Between the true and false horizons two ships were observed so plainly as to be easily distinguishable (with the aid of binoculars) by their shape, funnel markings and paintwork.

The first, S.S. *British Statesman*, bearing 320°, was observed upright and presented quite a normal appearance throughout, finally reaching the true horizon at 8.15 a.m. and passing *Glengarry* to the westward, about 1½ miles distant, at 8.38 a.m.

The second was an Italian troopship, about 2 points to the westward of the *British Statesman*. An upright image of her was also visible throughout, but other variations were observed. At times the normal image floated about 0°06′ above the true horizon, whilst a moment or two later her white hull reached to the true horizon, giving a deep, rectangular box-like appearance grotesque in comparison with the proportions of her funnels and upperworks. Half a minute later two normal shaped images were to be seen, one inverted and just touching the true horizon with her upperworks and the other 4 ft. to 5 ft. above it in the normal position. These quick changes took place three or four times in succession. She cut the true horizon at 8.20 a.m. and passed *Glengarry* at a distance of about 2½ miles at 8.47 a.m.

At about 8.40 a.m. the false horizon gradually faded with the advent of light S.S.W'ly airs and subsequent ships were picked up quite normally.

UNUSUAL VISIBILITY.

Gulf of St. Lawrence.

THE following observations have been received from S.S. *Ausonia*. Captain W. C. BATTLE, D.S.C., R.D., R.N.R., London to Montreal.

1st May, 1936, at 11.37 p.m. Canadian Eastern Standard Time. Barometer 30.20 in. Air 38°F. Water 32°F. Wind S.W. force 2. Sky cloudless.

Simultaneous bearings of :—

Heath Point Lt. Anticosti Island ...	Distance 46 miles.
South Point Lt. Anticosti Island ...	Distance 32 miles.
C. Gaspe Lt.	Distance 63 miles.
Fame Point Lt.	Distance 85 miles.

The light itself in each case was plainly visible. Eight hours later wind was N.E. force 4 to 5, overcast, snow and rain.

GREEN FLASH.

North Atlantic Ocean.

THE following is an extract from the Meteorological Record of M.V. *Tynefield*. Captain M. MANTHORPE, Flushing to Venezuela. Observer, Mr. R. F. MURRAY, Chief Officer.

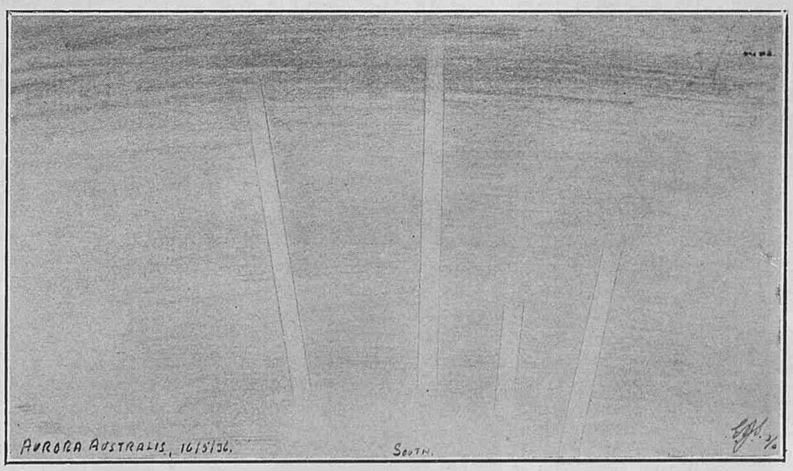
26th June, 1936, at 2204 G.M.T. sunset, light N'ly wind, very clear with light cirrus and cirrocumulus cloud. The setting sun was observed through binoculars, and showed deep orange, until just before disappearing, when a very distinct "green flash" was observed, the colour being very vivid.

Position of Ship :—Latitude 28°51′N., Longitude 45°26′W.

AURORA AUSTRALIS.

Tasmanian Waters.

THE following is an extract from the Meteorological Record of S.S. *Mongolia*. Captain H. R. RHODES, Hobart to Melbourne. Observer, Mr. E. J. SPURLING, 3rd Officer.



On 16th May, 1936, between 22.00 and 23.45 Ship's Time (1200 and 1345 G.M.T.) observed Aurora Australis. The southern horizon was illuminated from south-east to south-west, the brightest part bearing south.

During the first half-hour the Aurora took the form of separate rays which gradually extended skywards like a searchlight and then disappeared, occasionally several rays were visible at the same time. The illumination of the sky itself increased and decreased in brightness throughout.

It was noted that during the 8–12 watch the deviation of the compass, which had previously been 1° E., had changed to 1° W. The next morning, however, the error had returned to normal.

Position of Ship at 22.00 Ship's Time, Latitude 41° 13′ S., Longitude 148° 08′ E.

South Australian Waters.

The following is an extract from the Meteorological Record of S.S. *Port Wellington.* Captain R. Needham, London to Melbourne. Observer, Mr. W. M. Clough, 3rd Officer.

18th May, 1936, 9 p.m. to 10 p.m. Observed Southern Lights. First noticed as separate rays of light, three in number, bearing 180°. Rays extended to an altitude of 38° and were clearly defined for a period of about 20 minutes. Later these vanished and a diffused auroral light was observed having no definite outline, the outer edges gradually merging into normal tone of sky. The lower edges were made distinct by a thick formation of heavy cunb. clouds.

Approximate position of Ship, Latitude 44° 01′ S., Longitude 114° 35′ E.

TOTAL ECLIPSE OF THE SUN.

Aegean Sea.

The following is an extract from the Meteorological Record of S.S. *Strathaird.* Captain J. M. M. Tickell, Mediterranean Cruise. Observer, Mr. C. Mayne, 2nd Officer.

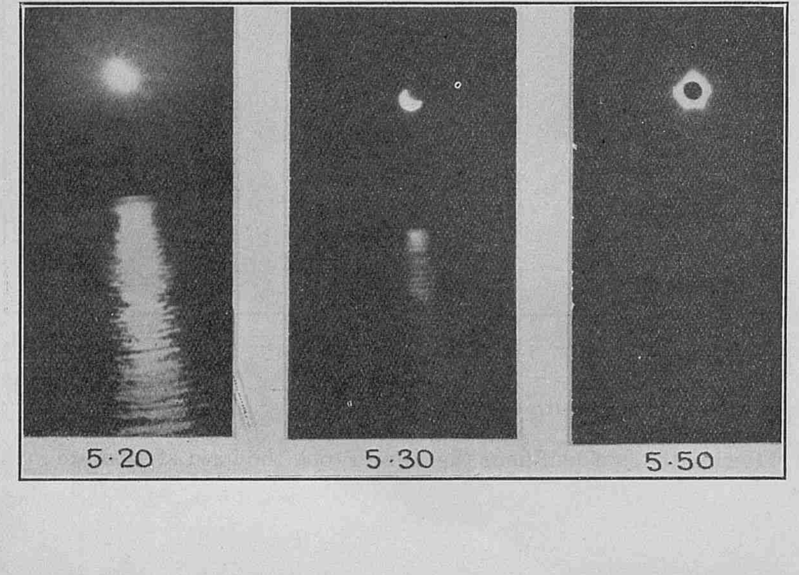
The track of the total solar eclipse of 19th June, 1936, traversed Southern Greece, Asia Minor, the Black Sea, Siberia and Northern Japan, and by a fortunate chance S.S. *Strathaird,* bound from Corfu to Athens, was scheduled to be on the central line of the eclipse at 5.50 Eastern European Standard Time when totality was due to occur.

This fact was discovered by a British astronomer, Rev. D. R. Fotheringham, who communicated it to the Royal Astronomical Society, with the result that a large party of astronomers availed themselves of this excellent opportunity to witness the phenomenon.

A considerable amount of interest had also been aroused among other passengers; this interest was stimulated by a most informative lecture given the previous evening by Rev. T. E. R. Phillips explaining in full the nature of the phenomenon.

At dawn on the 19th the excitement was intense. Ship's company and passengers had turned out to a man to witness the awe-inspiring spectacle, the observers had stationed themselves with their telescopes and instruments in carefully selected positions on the bridge, and all was ready. Conditions were perfect for observation, sky clear with a few wisps of detached cumulus on the eastern horizon, visibility excellent, wind south, force 2, the ship steering 010°, 21 knots.

At 5.05 the sun rose, bearing 069°, and a few seconds later was observed clearing the bank of cumulus, with a slight indentation at its upper right-hand edge. The sun rising further, the indentation increased, the sun at 5.30 assuming the shape of an ever-narrowing crescent.



5·20 5·30 5·50

At 5.45, the ship was turned to head 350° and stopped, bringing the sun on the starboard beam.

At 5.50. Position 37°09′N., 23°30′E., the island of Hydra bearing 000° distant 10.0 miles, the bodies having an altitude of approximately 8°, the last rays of sunlight disappeared.

The duration of totality, $58\frac{1}{5}$ seconds, was all too short to appreciate fully its beauty. At the moment of eclipse, the shadow of the moon could be observed rushing down to the earth, a falling curtain of darkness, and surrounding objects were illuminated by the weird greenish light diffused by the eclipsed sun.

On looking upwards, the full splendour of the eclipse was seen, the corona, a ring of pearly light, irregular in shape, very brilliant at the moon's edge extending a considerable distance from it and fading away. The prominences on the sun's limb were plainly visible, taking the form of small spheres of an orange hue, apparently adhering to the edge of the moon. These prominences are huge eruptions on the sun's surface, flinging flames of hydrogen and calcium thousands of miles into space, and witnessing them is a revelation of the immensity of space. The planet Venus was observed in the vicinity of the sun, glowing brilliantly.

At 5.51, a few scattered points of light were seen and a moment later, a slim crescent of the sun appeared to the right of the moon, the total eclipse was over and the rapid change from darkness to light had begun. This crescent widened until the sun appeared with the decreasing indentation at the bottom left-hand corner; the moon finally cleared the sun at 6.50, so ending the most remarkable and awe-inspiring spectacle it has been my good fortune to witness.

An event of interest occurred on the night previous to the eclipse, in the discovery of a new star of magnitude 2.6 in the constellation Lacerta. This discovery was made by Dr. Nielsen, the Danish astronomer, who was focussing his glasses in readiness for the eclipse, and turned them on this constellation, where he observed an unfamiliar star, which proved to be a nova."

Note.—The photographs are enlargements from negatives taken by Mr. Mayne. The first two show stages in the partial eclipse of the sun, but the rays in the first one are not real, being introduced by the lens of the camera. The third photograph shows the sun's corona and the dark body of the moon, no part of the sun itself being visible (total phase). The new star referred to had markedly decreased in brightness before the *Strathaird* arrived at Tilbury on 26th June and afterwards became invisible without optical aid. It was independently discovered by several observers on land on the same night that it was found by Dr. Nielsen.

LUNAR CORONA.

North Atlantic Ocean.

The following is an extract from the Meteorological Record of S.S. *Natia.* Captain E. A. Bridges, Liverpool to Rio de Janeiro. Observer, Mr. G. Parry, 3rd Officer.

At 2230 G.M.T., 4th June, 1936, observed a Lunar Corona. The colour sequence from the inner white field was brown, mauve, blue, green, yellow, orange and red. Clouds: cumulus, 2/10, and a light cirrus veil.

Ten minutes later the moon was hidden behind the passing cumulus clouds (moving westwards) and on clearing, the cirrus clouds had thickened, accompanied by cirrocumulus. The ring had enlarged and the colour formation changed to brown, with a green outer rim merging into the cirrus clouds. With each change of cloud formation the colour varied in intensity. Lower clouds were moving quickly to the west—upper clouds moving very slowly to the north-east.

At 2320 G.M.T. the sky was completely covered by altocumulus and cirrocumulus clouds, and the corona had disappeared.

Position of Ship: Latitude 30°04′N., Longitude 18°44′W.

LUNAR RAINBOW.

South Pacific Ocean.

The following is an extract from the Meteorological Record of M.V. *Durham.* Captain H. L. Upton, D.S.C., R.D., R.N.R., Wellington to Balboa. Observer, Mr. A. W. Marshall, 2nd Officer.

29th May, 1936 at 0400–0420 A.T.S. observed brilliant lunar rainbow right ahead. No definite colours were discernible but there was a suggestion of a blue or light violet tinge in the arc. As usual, it was very much brighter at the lower ends than at the upper.

The space enclosed by the bow appeared to be very much darker than normal (probably a contrast effect), but from base to base along the waters edge was a broad band of pale light.

The rainbow was followed by a heavy squall from the E.N.E. but even through the rain it persisted for some considerable time. Width of bow $2\frac{1}{4}^\circ$ to $2\frac{3}{4}^\circ$. Maximum height of upper edge $18\frac{1}{2}^\circ$. Wind N.E. force 5. Air 72°F. Sea 75°F. Moon three-quarters full.

Position of Ship: Latitude 21°40′S., Longitude 108°28′W.

South Indian Ocean.

The following is an extract from the Meteorological Record of S.S. *Mooltan*. Captain F. E. French, R.N.R., London to Brisbane. Observer, Mr. J. D. Strike, 2nd Officer.

On 28th May, 1936 at 2315 A.T.S. a lunar rainbow was observed on the port bow. A complete semi-circle was visible on a background of dense cunb. clouds; the colours of the spectrum were not distinguishable but a definite difference in brightness was noticeable between the inner and outer edges of the bow. The phenomenon lasted for about fifteen minutes, when the moon became obscured by passing clouds.

Moon's approximate altitude 30 degrees, true bearing N.83°W.

Ship steering 132°, speed 16 knots, wind east force 3. Barometer 29.87 in., air temperature 79°F. Sky 6/10 covered by cumulonimbus, and cumulus clouds. Occasional light drizzle.

Position of Ship: Latitude 15°45′S., Longitude 97°50′E.

WATERSPOUT.

North Atlantic Ocean.

The following is an extract from the Meteorological Record of S.S. *Clan Macwhirter*. Captain P. M. Macfarlane, New York to Cape Town. Observer, Mr. B. H. Magill, 3rd Officer.

2nd April, 1936, 1130 G.M.T., observed a waterspout four points on the starboard bow. The waterspout was formed from the south-east quarter of a heavy oblong cunb cloud which was travelling end on in a north-west direction, and heavy rain was precipitated from north-west quarter of the cloud, increasing and spreading rapidly.

1140 G.M.T. waterspout abeam about 2 miles distant and apparently much diminished in intensity; at 1145 G.M.T. when well abaft the beam, it finally dispersed in rain, which by this time had spread to the entire extent of the cloud. The waterspout, when first sighted, was well defined at base of cloud to about two-thirds the distance from the sea level and at an angle of about 22° from the vertical in a southerly direction, coming in contact with the sea a long distance astern of the cloud. The sea surface was much disturbed and seemed to rise, something like the water from a whale blowing but to a far greater extent, to a height of about 60 feet.

The weather at this time was fine and clear ahead and astern from south to north through east, Cu. and Frcu. amount 4/10, gentle S.E. breeze, slight sea and swell. Temperature, air 81°F., sea 79°F. Ship steaming 134° 10.8 knots.

Position of Ship: Latitude 3°48′N., Longitude 22°04′W.

METEORS.

South Indian Ocean.

The following is an extract from the Meteorological Log of M.V. *Maron*. Captain J. H. Blyth, D.S.C., New York to Singapore. Observer, Mr. J. M. Whittle, 3rd Officer.

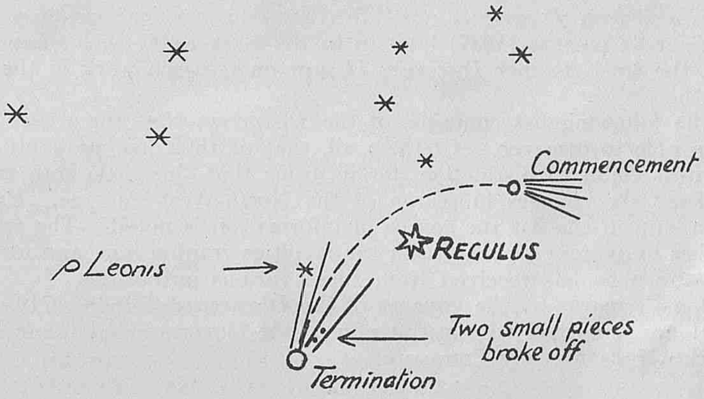
17th April, 1936, at 8.08 p.m. A.T.S., 1456 G.M.T., observed very bright meteor appear at R.A. 13h. 20m. Decl. $12\frac{1}{2}^\circ$N. and disappear at R.A. 14h. 20m. Decl. 33°N.

Duration of flight $2\frac{1}{2}$ secs. Magnitude from $\frac{1}{4}$ to $\frac{1}{2}$ size of full moon. Colour—bluish tinge. Sky clear. Meteor observed to "burst" at disappearance, one or two small pieces appearing to fall to earth. The R.A's and Declinations were directly observed and not calculated from Altitude and Azimuth.

Position of Ship: Latitude 7°06′S., Longitude 77°53′E.

Mediterranean Sea.

The following is an extract from the Meteorological Record of S.S. *Matheran*. Captain H. D. Fulcher, Alexandria to Oran. Observer, Mr. A. Dashwood-Howard, 3rd Officer.

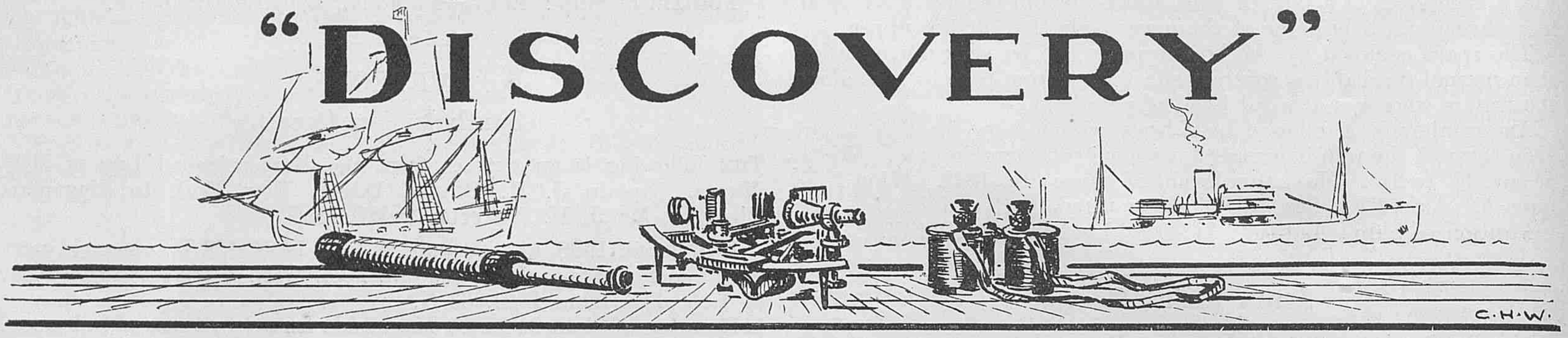


At 2202 G.M.T. on 15th May, 1936, a very bright meteor was observed about five degrees angular distance above Regulus. The flight commenced three degrees north-east of Regulus and terminated at a point a little south of ρ. Leonis (4), the track being a downward curve.

The meteor was visible for eleven seconds and of the brilliance of the planet Jupiter, yellowish-green in colour with a trail changing from yellow to orange. This trail lasted for two seconds after the object had disappeared, but just before this, two bright pieces seemed to break off the main part and then follow in the direction where the meteor was last visible.

Position of Ship: Latitude 34°01′N., Longitude 21°31′E.

SHIPS NAMED "DISCOVERY"



By Commander C. H. Williams, R.N.R. (Retd.)

In recent years the name *Discovery* has often appeared in the lists of British Regular Observing Ships. As a number of other ships, some of them famous, have borne the name in the past, it is thought that a short account of them may be of interest. It would be difficult to find a more appropriate name for vessels employed in voyages of exploration or research, and *Discoverys* have contributed much to mankind's knowledge of the oceans. Ships so named were used on the voyages of such famous explorers as Hudson (1610), Baffin (1615 and 1616), Cook (1776–9), Vancouver (1790–5), and Scott (1901–4).

Two British *Discoverys* now afloat are the wooden barque-rigged steamer at present (1937) laid up in the East India Dock, London, and the steel steamer *Discovery II* now on research work in the far South.

The following list contains all the *Discoverys* that the writer has been able to discover. Of them all, that of 1602 has probably the greatest claim to distinction, for it seems that this little ship made at least six voyages in search of the North-West Passage. Under each ship in the list the source of information is noted. The writer wishes to express his thanks for the facilities granted him, and for the assistance he has received from these various authorities.

Some remarks on the voyages of the *Discoverys* of 1668, 1719, and 1901 are published with permission of the Governor and Committee of the Hudson's Bay Company.

1602. *Discovery*, described as a Flyboat, later as a Barke, and again as a Pinnace, of measurement varying in the different accounts as 70, 55, and 40 tons. (The difference in measurement may be due to the use of two methods in those days, the "tons burden" and the "tuns and tunnage".) What her type and rig was is now uncertain, but the drawing above of a "Busse" of the period is probably something like her general appearance. These "Busses" were very stout little ships of about 60 tons burden.

In 1602 she was owned by the London East India Company (the Worshipful Fellowship of Merchants of London Trading to the East Indies), and she sailed from London River on the 2nd May that year with Captain George Waymouth in command, in company with the *Godspeed*, on a voyage to seek the North-West Passage.

They explored the coast of Labrador and part of what was later known as Hudson Strait.

Other voyages to the North-West by this ship were: in 1610, under Henry Hudson, into Hudson's Bay (Hudson's last voyage). 1612, in the expedition under Thomas Button in company with the *Resolution*. John Ingram was master of the *Discovery*. They explored most of the western shore of Hudson's Bay and wintered at Port Nelson. (It is an interesting fact that the two ships of Captain Cook's voyage in 1776 were also *Resolution* and *Discovery*.) In 1614, in a voyage to the coast of Labrador, with Gibbons in command. In 1615, with Bylot in command and Baffin as pilot, or mate. They penetrated Hudson Strait and what was later named Fox Channel. In 1616, again with Bylot and Baffin, the little *Discovery* sailed up Davis Strait and explored the great bay which has since been known as Baffin's Bay.

This was the sixth and last recorded voyage of this ship, to the North-West (the fifth voyage for her then owners, the Company of Merchant Discoverers of the North-West Passage), but it is possible that she was also the vessel in which Hawkridge sailed to the North-West in 1617 or 1619 for the same owners.

("Voyages of Foxe and James," Vols. 1 & 2, Hakluyt Soc.)

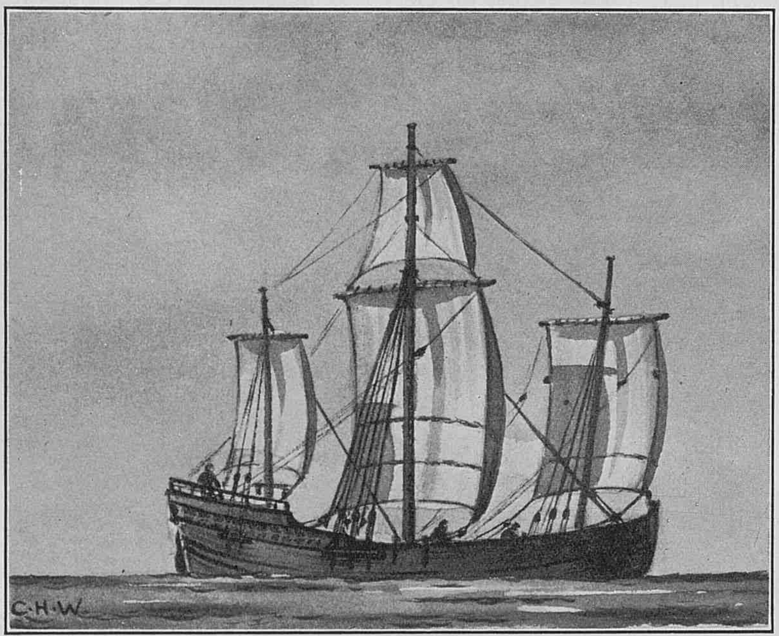


Figure 1.—1602. A Busse.
(Sketch of a model in the Science Museum, London.)

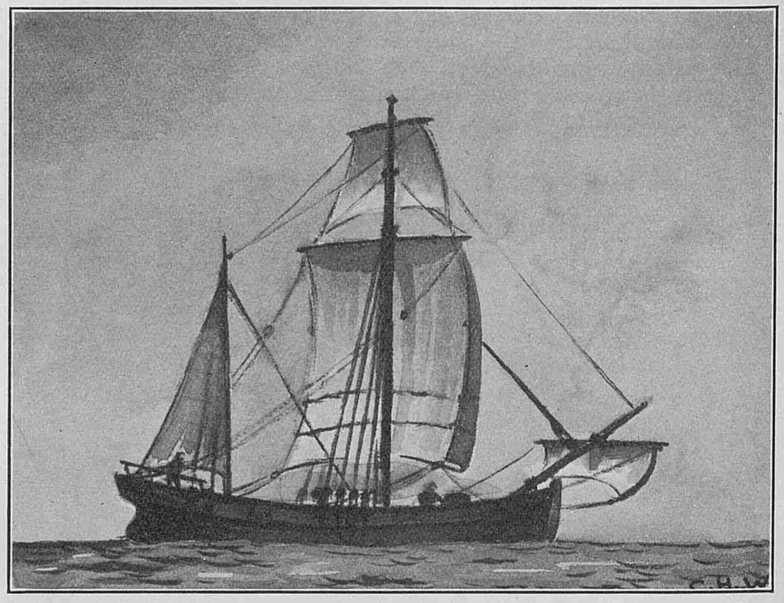


Figure 2.—1606. A Pinnace.
(Sketch of a model in the Science Museum, London.)

1606. A pinnace of 20 tons. Captain John Ratcliffe.

Sailed from the Thames in 1606 in company with two larger vessels, the *Susan Constant* and the *Godspeed*, in an expedition to colonize Virginia. The famous Captain John Smith was in this expedition.

This little ship is stated to have been again in the James River, Va., in 1610, with the pinnaces *Deliverance* and *Patience*, and was, therefore, not the same ship as Hudson's *Discovery* of that year.

(" Before the ' Mayflower '." by J. H. R. Yardley.)
(" Captain John Smith," by E. Keble Chatterton.)

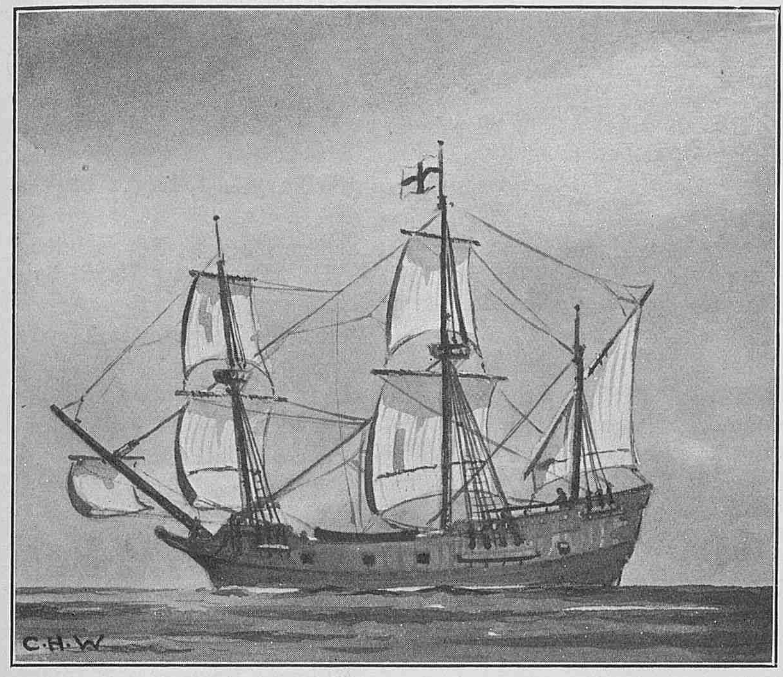


Figure 3.—1626. An East Indiaman.

(Sketch of a model of an ordinary small merchantman of the period, in the Science Museum, London.)

1626. A Merchant Ship of about 240 tons and 30 guns. Owned by the London East India Company. Captains John Johnson (1626) and Richard Allnutt (1633).

The ship traded to the East Indies from London.

(List of Marine Records, India Office.)

1651. *Discovery*, 4th Rate, of about 200 tons, 20 guns, and 70 men. Captain Thomas Wills.

She was built in 1651 and bought for the Navy of the English Commonwealth. This ship was in the fleet under William Penn that was sent to the West Indies in 1654. She was present at the unsuccessful attempt to take Hispaniola, and was also at the capture of Jamaica in May, 1655. A few days later, *Discovery* took fire and was blown up.

(List of ships of Royal Navy. Admiralty Library.)
(" The Royal Navy," by W. Laird Clowes.)

1668. A ketch named *Discovery* was bought by the Hudson's Bay Company, but was found to be unsuitable and was sold shortly afterwards.

(Hudson's Bay Company's Archives.)

1692. Their Majesties' Brigantine or Brig, of 77 tons and 8 guns. Built at Woolwich in 1692. Broken up at Portsmouth in 1709.

(List of ships of Royal Navy. Admiralty Library.)

1700. *Discovery*, East Indiaman. Captain John Evans.

She had a crew of 44, and was probably of about 250 to 300 tons, and 20 guns. Her voyages were from London to Socotra and India.

(List of Marine Records. India Office.)

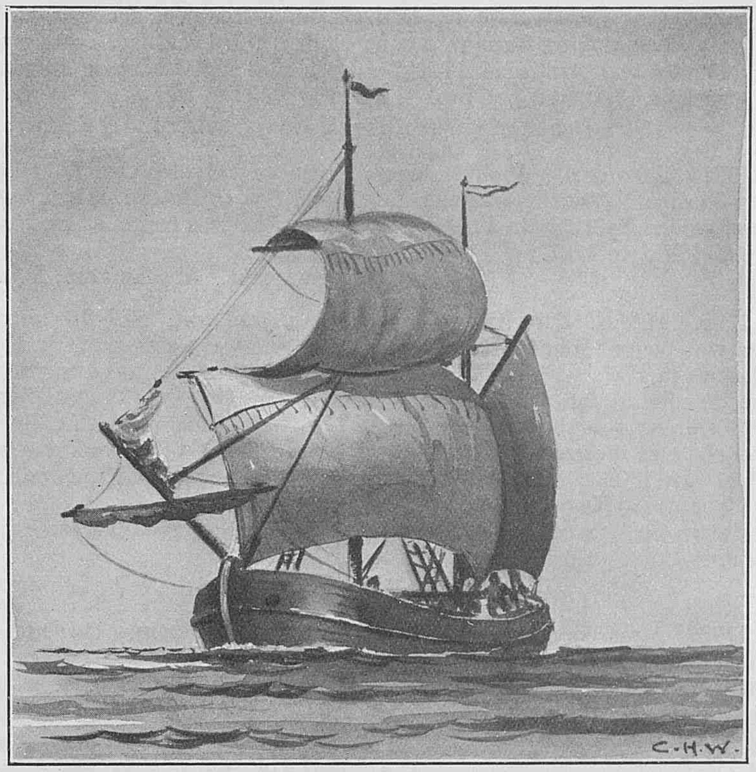


Figure 4.—1711. A Dogger.

(From an old print.)

1711. A Dogger (a two-masted fishing vessel something like a ketch, with bluff bows) was captured by H.M.S. *Canterbury* in 1711 and added to the Royal Navy. She was sold out of the Service in November 1712.

(List of ships of Royal Navy. Admiralty Library.)

1719. *Discovery* sloop, of 40 tons. Captain David Vaughan, and ten men. Owned by the Hudson's Bay Company.

She sailed from London in 1719 in company with the *Albany*, frigate, Captain George Berley or Barlow, in an expedition under the command of Captain James Knight. They were sent out by the Hudson's Bay Company to search to the north and west of Latitude 64° in Hudson's Bay for the purpose of discovering the North West Passage and to find gold and copper mines reported to exist.

Neither vessel returned and every member of the expedition perished. In 1722 Captain Scroggs of the Hudson's Bay Company's sloop *Whalebone* stated that he had seen what appeared to be the wrecks of the ships on Marble Island.

No actual proof of the fate of the expedition was found until 1767, when the remains were discovered on Marble Island (named Brooke Cobham Island by Fox in 1631). They were found by Captain Joseph Stevens of the Hudson's Bay Company's sloop *Success* while on a trading voyage from Churchill Factory to the northward.

(Hudson's Bay Company's Archives.)

1741. H.M.S. *Discovery*, a Pink, of 154 tons, 12 carronades and 4 swivels. William Moor (late Hudson's Bay Company's service) in command. She sailed from England in 1741 with H.M.S. *Furnace* in an expedition sent by the Admiralty to seek the North West Passage. The expedition was under the command of Captain Christopher Middleton, one of the ablest of the Hudson's Bay Company's captains with twenty years' experience of navigation in Hudson's Bay. The ships wintered at Churchill, and the following year they explored the coast to the northward and up Rowes Welcome.

The ships were back in the Thames by October, 1742. The *Discovery* was sold at Gibraltar in May, 1750.

(List of ships of Royal Navy. Admiralty Library.)
(" Geography of Hudson's Bay," by John Barrow.)

1776. H.M.S. *Discovery*, barque, of 299 tons and 8 guns. She was built at Whitby in 1774 as the merchantman *Diligence*, and was purchased for the Royal Navy in 1776 from Mr. Herbert of Scarborough.

Under the command of Captain CHARLES CLERKE, she was with H.M.S. *Resolution* on Captain JAMES COOK's third and last voyage to the Pacific and Arctic in 1776–79. She was made a store ship at Chatham in 1780, and was broken up in 1797.

(List of ships of Royal Navy. Admiralty Library.)

1781. *Discovery.* A ship rigged American privateer, of 20 guns and 80 men. Owned by James Jarvis and Co., of Boston, Mass., and commanded by Captain FRANCIS BROWN. She was commissioned on the 2nd March, 1781.

(U.S. Navy Department. Washington, D.C.)

1790. H.M.S. *Discovery,* sloop of war, 337 tons and 16 guns. She was bought for the Royal Navy while she was being built on the Thames in 1789. From 1790 to 1795 she was on exploration work in the Pacific under the command of Captain GEORGE VANCOUVER. This ship was in the Medway during the Naval Mutiny at the Nore, and she was present as a bomb vessel at the Battle of Copenhagen in 1801. In 1808 she was converted to a convict ship and moored in the Thames at Deptford.

This vessel is sometimes wrongly described as the *Discovery* of Captain COOK's third voyage.

(List of ships of Royal Navy. Admiralty Library.)

1792. A merchant brig of 241 tons. Captain J. REED. Owned by Allen and Company. She traded to Jamaica.

In Lloyd's Register of Ships, 1801, this ship is shown as being nine years old, and in the Register of 1804 she is described as a French prize.

(Lloyd's Register of Ships.)

1811. A brig of 303 tons and 10 guns. Owned by the Honourable East India Company. She was built at Howrah on the River Hooghly by M. Smith in 1811 as the *Margeret and Francis,* was renamed *Discovery* and listed as Honourable Company's Surveying Ship. Condemned to be sold in May, 1828.

(List of Marine Records. India Office.)

1863. A schooner of 40 tons built and registered at Victoria, B.C., in 1863. Owned by R. Brodrick, of Victoria, and later by N. Wassam, of San Juan Bay, B.C.

(Mercantile Navy List & Maritime Directory, 1885.)
(Department of Marine. Ottawa.)

G. NARES to the North Polar Sea and North Greenland via Smith's Sound. They returned to England in 1876.

Discovery was converted to a storeship in 1878, and remained so until 1903. She was then sold out of H.M. Service and renamed *Bloodhound.* She is shown in Lloyd's Register up to 1918.

(" The Royal Navy," by W. Laird Clowes.)
(Lloyd's Register of Shipping.)
(List of ships of Royal Navy. Admiralty Library.)

1874. A wooden barkentine of 416 tons built at Port Discovery, Washington, U.S.A., in 1874. She was commanded by Captain LEE, owned by E. E. Kentfield, and registered in San Francisco, Cal.

(Lloyd's Register of Shipping, 1890.)

1879. A ketch of 78 tons built at Hull in 1879, and owned by William J. Robins of Hull.

(Mercantile Navy List, 1885. Lloyd's.)

1882. A schooner of 35 tons built at Green's Bay, Newfoundland, in 1882, and registered in St. John's, NF. Owned by David Stark of Notre Dame Bay, Newfoundland.

(Mercantile Navy List. Lloyd's.)

1887. A small American vessel of about 20 tons, owned in Tappahammock, Virginia. The date and place of her being built are not known. She was abandoned in March, 1902.

(Department of Commerce. Washington, D.C.)

1888. A steel screw cargo steamer of 1,916 tons, built by J. L. Thompson and Sons at Sunderland for Messrs. Rowland and Marwoods Steamship Co., Ltd., of Whitby. This *Discovery* was sold in 1906 to the Marquand S.S. Co., and again in 1912 to Italian owners, and renamed by them *Savis.*

(Lloyd's Register of Shipping.)

1889. A screw steamer of 209 tons, built at Port Townsend, Washington, U.S.A., in 1889. She was lost in December, 1903.

(Department of Commerce. Washington, D.C.).

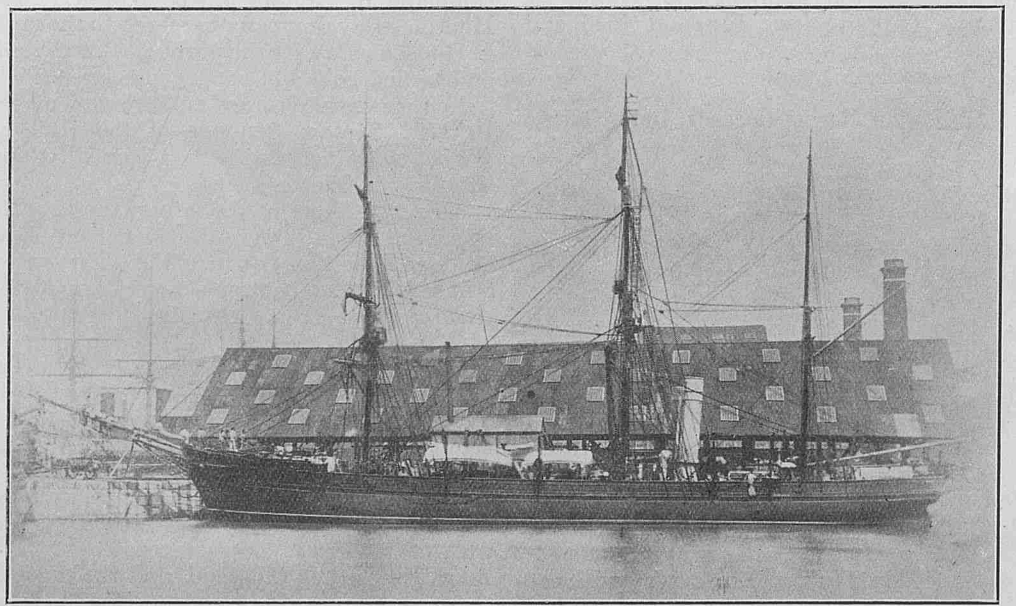


Figure 5.—1873. " Discovery," ex " Bloodhound."
(Photo. by Nautical Photo Agency, London.)

1873. A wooden barque rigged whaling steamer of 556 tons, built at Dundee in 1873 as the *Bloodhound.* She was bought for the Royal Navy in 1874 and renamed *Discovery.*

Commanded by Captain H. F. STEPHENSON she left England in May, 1875, in company with H.M.S. *Alert* in an expedition under Captain

1901. *Discovery,* a wooden barque-rigged steamer of 736 gross, and 357 net tons; specially built for polar exploration by the Dundee Shipbuilders Company, at Dundee.

She was commanded by Captain ROBERT FALCON SCOTT, R.N. on the National Antarctic Expedition of 1901–1904, organized by the

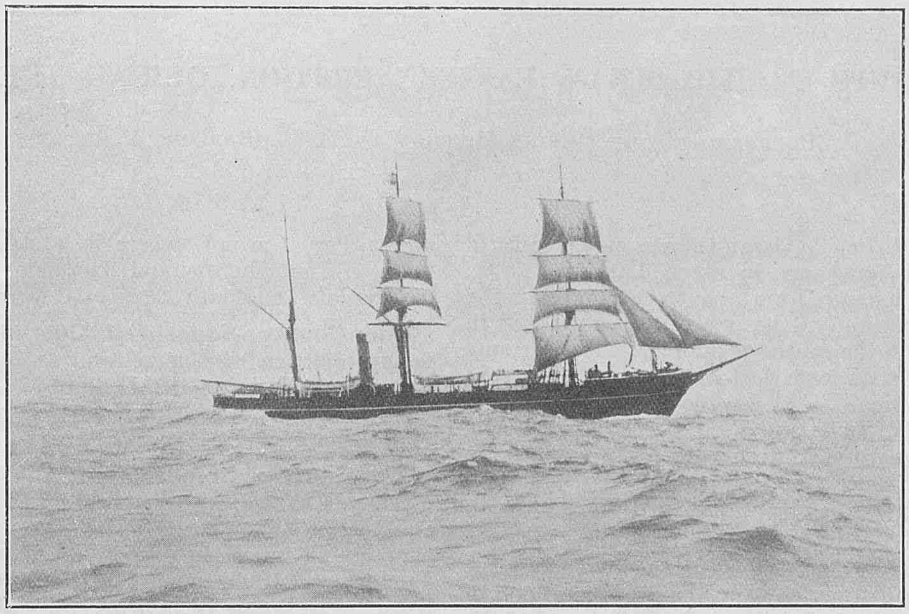


Figure 6.—1901. " Discovery."
(Photo. by Nautical Photo Agency, London.)

Royal Geographical Society and the Royal Society. Bought from the Royal Geographical Society by the Hudson's Bay Company in 1905, she traded that year into Hudson's Bay with Captain A. Gray in command. From 1906 to 1911 she was employed in the same service. In 1912 and 1913 she was laid up. She was on War service from 1914 to December, 1916, when she was again handed over to the Hudson's Bay Company.

After trading into Hudson's Bay in 1918 and 1919, she was laid up from 1920 to 1923, when she was sold to the Crown Agents for the Colonies acting on behalf of the Government of the Falkland Islands. She was refitted for work under the Discovery Committee, and left England in October, 1925 for whaling research and hydrographic survey work in the Far South. Captain J. R. Stenhouse, D.S.O., O.B.E., D.S.C., R.N.R., was in executive command, and Doctor Stanley Kemp directed the scientific work. Returning to England in 1927 she was laid up until in 1929 she again sailed for the Antarctic with the British Australia New Zealand Antarctic Research Expedition under Sir Douglas Mawson. Captain J. King Davies was in command of the ship, and on retirement was succeeded by Captain K. N. MacKenzie. *Discovery* returned to London in 1931 and has since then remained in the East India Dock, laid up.

1911. A small American motor vessel of 17 tons built at Tacoma, Washington, in 1911, and lost in September, 1926.

(Department of Commerce. Washington, D.C.).

1921. Also a small American craft built at Seattle, Washington; in 1921. This vessel is owned by O. Fjelde, in Ketchikan, Alaska, and is still in service.

(Department of Commerce. Washington, D.C.).

1929. Royal Research Steamship *Discovery II*, of 1,036 tons gross, and 344 tons net. Length 221 feet. Built in 1929 at Port Glasgow and owned by the Government of the Falkland Islands. The work of this ship, engaged on whaling research and other scientific work in the Antarctic, under the direction of the " Discovery Committee " of the Colonial Office, is known to readers of this journal. The photograph below was taken during her attendance at the Jubilee Naval Review at Spithead in 1935.

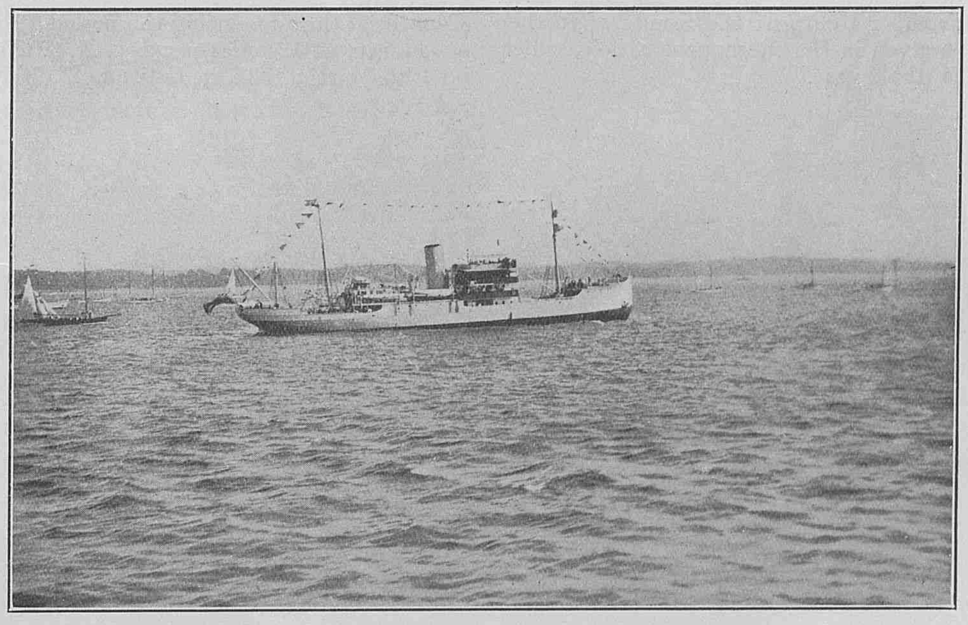


Figure 7.—1929. " Discovery II."
(Photo. by Nautical Photo Agency, London.)

CURRENTS IN THE SOUTH PACIFIC OCEAN, EASTERN PORTION, DURING THE SOUTHERN SUMMER.

Prepared in the Marine Division by E. W. Barlow, B.Sc.

In the eastern part of the South Pacific Ocean the permanent area of high pressure is situated with its centre in about Latitude 30° S., Longitude 100° W. The area extends from about the middle of the ocean to the coast of South America. It has a slight seasonal shift in latitude, being most southerly in the southern summer. The currents shown by the present year's charts form part of the circulation connected with this high-pressure area. They are the Peru or Humboldt Current, flowing up the coasts of Chile and Peru, on the eastern side of the area, and the South Equatorial Current which flows along the northern side of the area and thence across the ocean. A small part of the easterly Counter-Equatorial Current of the North Pacific Ocean is also included.

The Peru or Humboldt Current.—This current of cool water flows up the west coast of South America from the neighbourhood of of Chiloe Island. Generally speaking, it follows the main trend of the coast, but in some places has also a component off shore setting between west and north-west.

In November to January the Peru Current flows with mean sets ranging from 4 to 9 miles per day. It is stronger in February to April, when the mean sets vary from 4 to 15 miles per day. The mean set of 20 miles per day charted in Latitude 24° S. to 26° S. during this quarter is based on only two observations.

Drifts up to 1 knot are frequently met with in any part of the Peru Current, throughout the six months November to April. The strongest drifts are experienced in the northern part, mostly between the equator and Latitude 6° S., where they may reach about 1½ knots. In the period 1910 to 1936 only one drift was observed which considerably exceeded this strength, a current observed for a short period, running at the rate of 60 miles per day, N. 16° E., recorded by H.M.S. *Durban*, on 15th April, 1933, in Latitude 0° 24′ S., Longitude 81° 05′ W.

Within the usual region of the Humboldt Current sets in various southerly directions are not infrequent, especially during November to January. These may reach 1 knot; in the neighbourhood of the equator this rate may be exceeded. These southerly sets of warmer water are well known. In some years there is said to be a warm southerly current flowing down the coast of Peru between the coast and the northerly current. This current is known as the "Corriente del Nino," the Holy Child Current, as it usually begins to flow about the time of Christmas. It does not appear on the charts of mean arrows for the months of November to April; the results of further investigation will, however, be given in the subsequent article, which summarizes the currents of the whole year.

The Peru Current, where it is strongest, trends to the westward between the equator and Latitude 10° S., leaving the coast and passing into the South Equatorial Current.

The Counter-Equatorial Current.—Only a small part of the eastern portion of this current is included in the charts, between Latitude 6° N. and 8° N., Longitude 84° W. to 92° W. In this region the drift is stronger during the northern winter, November to January, than in February to April.

The Coast of Colombia and the Gulf of Panama.—Throughout November to April the mean set off the coast of Colombia, north of the equator, is north-easterly. Between Latitude 2° N. and 4° N. it averages 11 miles per day (from eight observations) in November to January and 16 miles per day (from four observations) in February to April. The coasts of Central America and of Colombia form a large gulf, at the head of which is the Gulf of Panama. The waters of the Counter-Equatorial Current flow into this large gulf from the western side and those of the north-easterly current above referred to flow into its eastern side. These currents meet and give rise to an outflow, which sets in a south-westerly direction down the centre of the gulf and passes into the northern part of the South Equatorial Current. The mean strength of the outflow from the Gulf of Panama and the region of Cape Mala is from 7 to 15 miles per day in November to January and from 13 to 17 miles per day in February to April. Owing to the meeting of the currents sets in any direction may, however, be experienced. Drifts exceeding 2 knots may be met with in this region. Only one drift exceeding 2½ knots was reported in the period 1910 to 1936 (November to April); this was at the rate of 99 miles per day, S. 22° W., recorded by S.S. *Rimutaka*, in Latitude 3° 29′ N., Longitude 81° 53′ W., on 3rd March, 1925.

The South Equatorial Current.—The main strength of this current flows westward between Latitudes 4° N. and 6° S. in the eastern part of the South Pacific Ocean. The mean sets vary considerably within this belt, being as much as from 20 to 25 miles per day in some places and only 5 to 7 miles per day in others. A proportion of easterly sets occurs in most areas. South-west of the main current, over the region covered by the observations, westerly current predominates, gradually weakening as the latitude increases, to about Latitude 24° S.

Six drifts of 50 miles per day or more were observed in the South Equatorial Current during the period 1910 to 1936, the greatest being at the rate of 72 miles per day, N. 80° W., recorded by S.S. *Ferndale* on 12th March, 1931, in Latitude 2° 53′ N., Longitude 92° 12′ W.

THE "BURST" OF THE SOUTH-WEST MONSOON NEAR CEYLON.

By H. Jameson, D.Sc., Superintendent, Colombo Observatory.

Since July, 1922, a Robinson cup anemometer has been maintained at the Little Basses lighthouse, on a reef about 6 miles from the south-east coast of Ceylon.

The anemometer is placed on the top of a derrick mast, at the end of a jetty, and about 80 feet to the north of the lighthouse. It is about 30 feet above sea level.

This instrument is read twice a day, at 9 a.m. and 5 p.m., by a lighthouse-keeper, and estimates of wind direction and Beaufort force, cloud type and amount, are made at the same time.

The winds recorded should be comparatively free from local land effects, friction, or land and sea-breezes, at any rate during the monsoons, and should then give a fair idea of general wind conditions at sea near the south-east coast of Ceylon. The anemometer readings have not been corrected for index error, and high winds may therefore be somewhat overestimated, but errors due to this cause should not be serious.

These observations were recently examined to see if it were possible to fix a mean date for the setting in of the south-west monsoon. The total daily mileage was averaged for each group of 5 days, from 1st April to 9th June, giving 14 figures for each year. The corresponding curves are shown in the plate, as well as the average curve for the 14 years. The dates given are the mean dates for each 5-day group; for example, May 13 refers to the mean over the 5 days, May 11–15. The vertical scale on the left gives the number of miles recorded per day, that on the right corresponding mean Beaufort strength.

The average wind remains fairly constant over April and the first few days of May, but commences to rise from about 5th May, and rises steadily till about 21st May, thereafter remaining constant at a much higher level.

On the theory that the monsoon comes in suddenly, with a "burst," it would seem natural to explain the gradual rise in the average curve as due to the variations in the date of the burst, and adopt a date about the middle of the rise, say about 13th May, as the average date of the burst in the south of Ceylon.

An examination of the actual records shows that it is generally possible to fix a date, before which the winds were usually light, and often variable, but after which they were steadily south-westerly and at least of moderate strength. These dates are nearly all in the first half of May, sometimes even, as in 1923 and 1934, towards the end of April. Their average must be early in May, appreciably before the 13th. Sometimes, too, in April or early May, there are several days of fairly strong winds, which are practically always associated with some more or less south-westerly direction, after which light winds are again experienced.

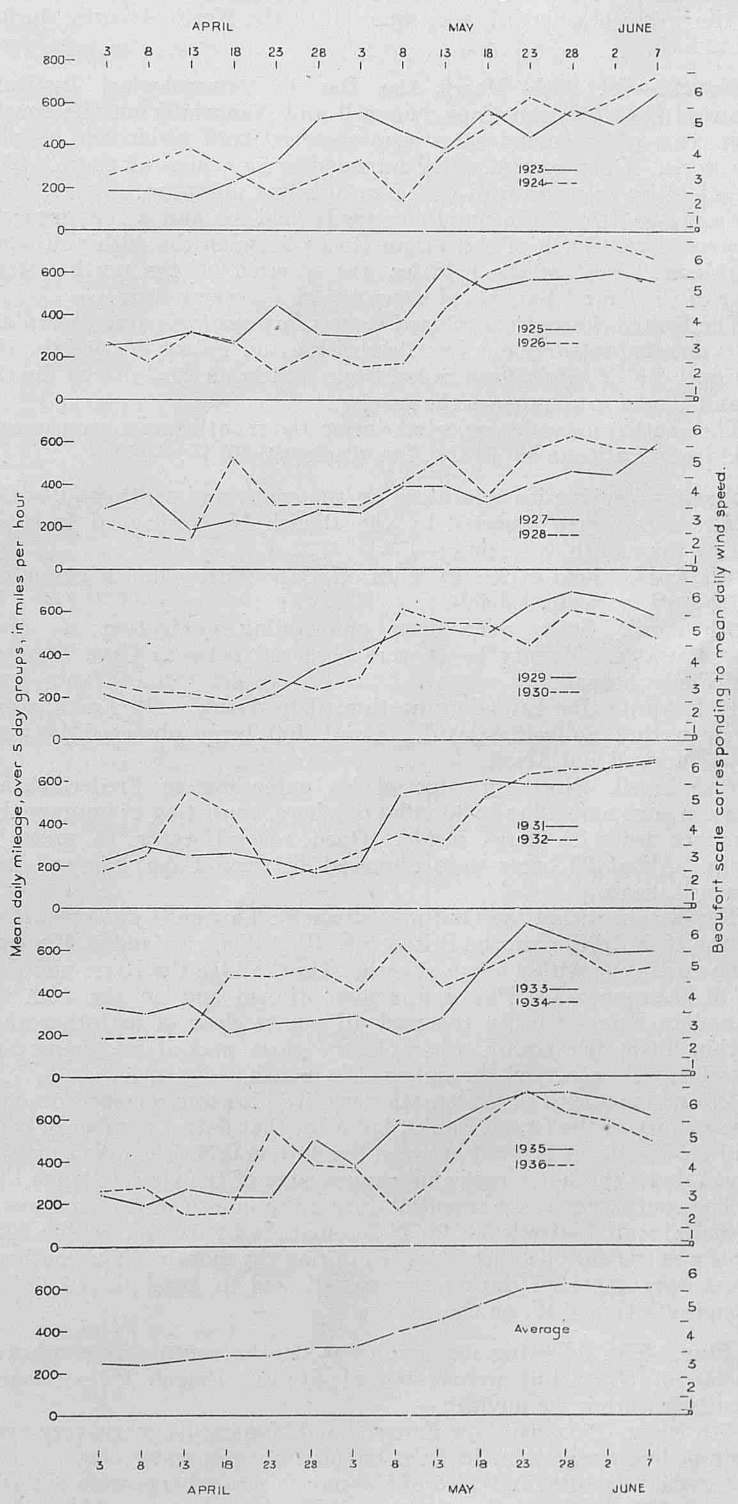
These early south-westerly winds are frequently associated with definite depressions in the Bay of Bengal, which, from their position relative to Ceylon, tend to cause the winds near the Island to approximate to south-westerly directions.

These south-westerly winds at the Little Basses are generally in fair accord with the winds at Colombo at a height of half a kilometre (1,640 feet) and with the direction and strength of the barometric gradient over Ceylon. They suggest that the first stages of the south-west monsoon, near the Island, appear early in May, or even in April, and that the process continues thereafter either as a fairly gradual increase of the wind strength or as a series of surges. Even when fresh or strong south-westerly winds set in suddenly, and continue without much change, this too may occur early in May, or late in April.

The process of monsoon growth near Ceylon is complicated by the fact, already mentioned, that the depressions on the fringe of the monsoon generally appear in the Bay of Bengal, and hence tend to give winds from approximately south-westerly directions over the Island.

There is a tendency to accept any unusually strong surge of the monsoon, accompanied by rough seas and squally weather, which happens about or after the middle of May, as the actual "burst," but such phenomena may be fortuitous, and their dates of no great importance in a study of the setting in of the monsoon.

Anemometer readings at Little Basses Lighthouse, Ceylon.



SUMMARY OF ICE CONDITIONS, WESTERN NORTH ATLANTIC, 1936.

Prepared in the Marine Division by Commander J. Hennessy, R.D., R.N.R.

The following summary of ice conditions in the western North Atlantic during the 1936 season is compiled from ice reports returned from those ships of the Voluntary Observing Fleet traversing the Trans-North Atlantic routes, from bulletins issued by the International Ice Patrol Service and from other sources.

January.—The only ice reported during the month was situated 30 miles N. by W. of North Cape, Iceland, on 4th January, extent unknown.

February.—No ice other than local ice, formed in bays and inlets on the western seaboard, was reported in the North Atlantic during the month.

March.—On 27th March the Danish Meteorological Institute reported that between Cape Farewell and Nanortalik on the south-west coast of Greenland bergs were observed both within and outside the storis. Open coastal water extended to four miles off shore. The extent of ice to northward of Nanortalik was unknown.

From the 4th of the month onwards field ice and a few growlers were observed north of the Virgin Rocks between the 40th and 52nd meridians. Most of the field ice was situated off the north-eastern edge of the Grand Banks and some was of a heavy nature.

The United States Coast Guard vessels *Pontchartrain* and *Champlain* were detailed to carry out Ice Observation and Patrol Service for the season. The *Pontchartrain* sailed from Boston on 23rd March for the Grand Banks to commence the service.

The southernmost ice reported during the month was a growler and field ice in Latitude 48° 31′ N., Longitude 49° 50′ W.

April.—Varying ice conditions on the south and south-west coasts of Greenland were reported by the Danish Meteorological Institute during the month as follows :—

4th April. Free of ice 40 miles off Cape Farewell, ice extending northward to Frederikshaab.

5th April. Storis very open unimpeding navigation; no open coastal water. Twenty bergs were observed between Cape Farewell and Frederikshaab.

17th April. Ice extending northward to Arsuk. Off Arsuk, storis so open that no belt existed. About 100 bergs observed between Cape Farewell and Arsuk.

20th April. Northern edge of ice extending to Frederikshaab, western edge extending to 30 miles off shore, consisting of impregnable compact ice with bergs inside. Open coastal water 18 miles or more. About 20 bergs were observed between Cape Farewell and Frederikshaab.

Navigation within the Gulf and River St. Lawrence was opened up on the 13th April when the British S.S. *West Wales* arrived at Montreal from Argentina with a cargo of corn. On the 14th the River and Gulf of St. Lawrence Ice Patrol was discontinued and on the 24th the Canadian Signal Service reported all points clear of ice other than within Belle Isle Strait, where heavy close packed ice, bergs and growlers were observed throughout the month.

Prior to the 12th of the month very little ice was reported on or in the vicinity of the Grand Banks, but after that date a number of bergs and growlers were sighted between the 46th and 50th parallels drifting south down the north-east and eastern edge of the Grand Banks.

The southernmost ice reported during the month was a small patch of field ice in Latitude 45° 06′ N., Longitude 51° 05′ W. on the 23rd. This was the only field ice observed during the month. The southernmost berg reported during the month was in Latitude 46° 01′ N., Longitude 47° 25′ W. on the 28th.

May.—The following ice conditions on the south and south-west coasts of Greenland were reported by the Danish Meteorological Institute during the month :—

5th May. Between Cape Farewell and Nunarssuit, storis very open, unimpeding navigation, 18 miles or more of open water.

On the 7th, 10th, and 28th of the month many bergs were observed south of Cape Farewell, otherwise there was no ice on these dates within 75, 40, and 20 miles, respectively, of the Cape.

Within the Strait of Belle Isle numerous bergs and growlers were reported throughout the month, but on the 21st the S.S. *Phillip T. Dodge* navigated the Strait. This is an exceptionally early date for the opening of the Belle Isle route. She reported the following ice conditions : "No floating ice west of Cape Norman, numberless growlers and small dangerous pieces to 25 miles east of Belle Isle, patch of loose field ice sighted northward. Consider Strait approach safe."

Other ships using the Belle Isle route subsequent to the 21st reported many bergs and growlers within the Strait and eastward on both sides of the tracks to the 51st meridian.

In the western North Atlantic, on and in the vicinity of the Grand Banks, reports of ice were not nearly so numerous as is generally the case during the month of May. A few bergs were reported on the eastern side of the Banks south of the 48th parallel up to the 14th of the month, but after that date, with but one exception, all reports received referred to ice situated north of the 48th parallel between the 45th meridian and the east and north-east coast of Newfoundland. The southernmost ice reported during the month was observed in Latitude 45° 10′ N., Longitude 45° 39′ W. on the 12th.

June.—On the 3rd and 22nd of the month the Danish Meteorological Institute reported : "No ice within 50 miles of Cape Farewell."

Throughout the month numerous bergs were reported by ships using the Belle Isle route both within the Strait and on the tracks eastward from Belle Isle to the 51st meridian.

A few bergs were reported, more especially during the early part of the month, in that region north of the 49th parallel between the north-east coast of Newfoundland and the 46th meridian. There was no ice reported south of the 49th parallel through the month.

The southernmost ice observed during the month was a berg sighted on the 7th in Latitude 49° 25′ N., Longitude 50° 44′ W.

The southern tracks being free of ice the International Ice Patrol was discontinued for the season on 9th June, this being a month earlier than was the case in the previous ice season.

On 18th June the U.S. Coast Guard cutter *General Greene* sailed from St. John's, Newfoundland, to carry out oceanographical and ice observational work in northern waters. On 24th June she reported : Numerous bergs, hundreds of growlers and scattered open pack ice from Latitude 59° 31′ N., Longitude 44° 22′ W., to Cape Farewell. One hundred bergs and scattered open pack ice were observed from Cape Farewell westward to Longitude 44° 30′ W. Hundreds of large bergs along the coast and as far south as could be seen from Latitude 59° 40′ N., Longitude 44° 30′ W. to Longitude 46° 00′ W. On the 26th, ten bergs were observed in the entrance to Arsuk Fjord.

July.—On the 17th the American schooner *Effie M. Morrissey*, Captain R. A. Bartlett, on passage from Cape Farewell northward through Denmark Strait, reported nine bergs 20 miles east of Cape Farewell, with loose ice in narrow strings inshore. No ice or bergs worth mentioning until Latitude 63° 27′ N., Longitude 40° 25′ W. was reached. From there to Latitude 64° 05′ N., Longitude 39° 39′ W., only strings of loose ice and scattered large bergs were seen, hence no ice or bergs observed until in the vicinity of Angmagsalik. From Cape Dan to Latitude 67° N., Longitude 33° W., there was ice and many large bergs. To Latitude 68° N., Longitude 28° W., no ice seen other than scattered bergs.

On 22nd July the Danish Meteorological Institute reported no ice within 20 miles of Cape Farewell. Bergs sighted in Latitude 59° N. On the 26th, off Arsuk, on the south-west coast of Greenland, open water extended for over 18 miles. Outer edge of ice compact, but was open farther in.

Ice was sighted throughout the month by ships using the Belle Isle route, both within the Strait of Belle Isle and eastward on the tracks to the 51st meridian, but the bergs reported within this region were not nearly so numerous as during the preceding month.

In that region, south of the Belle Isle tracks, only three reports of ice were received during the month of which the southernmost was a berg sighted on the 19th in Latitude 48° 51′ N., Longitude 49° 32′ W.

August.—On the 4th the Danish Meteorological Institute reported no ice other than a few bergs between Cape Farewell and Nunarssuit. On the 18th Julianehaab Bay was free of ice and there was no ice within ten miles of Cape Farewell.

On the 15th the American schooner *Effie M. Morrissey*, Captain R. A. BARTLETT, when navigating between Cape Walloe and Prince Christian Sound on the south-east coast of Greenland, during the dark hours, passed many bergs. Between Latitude 59° 34′ N., Longitude 43° 45′ W., and Latitude 59° 07′ N., Longitude 44° 00′ W., three large bergs were observed.

No ice other than the above was reported in the western North Atlantic during the month.

September.—On the 10th the Danish Meteorological Institute reported Julianehaab Bay free of ice, and no ice within 30 miles of Cape Farewell. On the 28th, off Arsuk, no storis or other ice was observed.

Two reports were received of bergs sighted on the 13th and 16th respectively on the Belle Isle routes between Belle Isle and the 54th meridian. Other than this, no ice was observed in the western North Atlantic during the month.

October.—On the 23rd the Danish Meteorological Institute reported Julianehaab Bay free of ice, and sea free of ice to 20 miles off Cape Farewell.

Two bergs were reported within Belle Isle Strait on the 25th and 27th of the month respectively. No ice was reported during the month on the tracks to the eastward of the Strait or in any other region of the western North Atlantic.

November.—Within the River St. Lawrence, light open ice inshore from Lake St. Peter to Murray River was reported by the Canadian Signal Service on the 20th.

On the 8th the British S.S. *Erin* intercepted the following W/T message from the Greek S.S. *Defyros* : " S.S. *Defyros* at 1510 G.M.T. in Latitude 32° 44′ N., Longitude 49° 58′ W., passed a solid large volume of ice about sixty feet long and five feet above water drifting west and dangerous to navigation."

This is an exceptional position in which to sight ice, and it was the only ice observed in the western North Atlantic throughout the month.

December.—Within the Gulf and River St. Lawrence light open ice was reported at Belle Isle on the 15th and on the 26th the Canadian Signal Service reported : " Montreal to Three Rivers, river frozen, eastward to Murray Bay heavy open ice. Saguenay to about Cape des Rosiers, heavy closed packed ice everywhere. Other points east, no ice in sight."

No reports of ice sighted in the western North Atlantic were received during the month.

CHART A shows the monthly limits within which reports of ice have been received by the Meteorological Office during the year 1936, also the monthly limits reached by ice over the period 1901–36.

Particulars of ice observed in exceptional positions in the North Atlantic of which the Meteorological Office have records are given in the following table and their plotted positions are shown on CHART B.

Exceptional positions of ice.

No.	Date.	Source of Report.	Position of ice.		Remarks.
			Latitude N.	Longitude W.	
1	14.1.1836	H.M.S. *Cove* ...	60° 55′	5° 50′	Two bergs.
2	9.1.1913	S.S. *Oriflamme* ...	48° 37′	34° 42′	Berg 40 ft. high, 400 ft. long.
3	27.1.1916	S.S. *Rio Verde* ...	33° 34′	70° 32′	Hummock 2 ft. high, 30 ft.in circumference.
4	3.2.1922	S.S. *Weehawken* ...	41° 42′	58° 59′	Ice (sustained bow damage).
5	24.3.1913	S.S. *Floride* ...	46° 21′	34° 05′	Berg 60 ft. high, 200 ft. long.
6	20.3.1915	S.S. *Wanaby* ...	36° 55′	48° 32′	Piece; supposed portion of a berg, 5 ft. high, 60 ft. long.
7	21.3.1920	U.S. Hyd.,Bulletin	38° 02′	40° 38′	3 ft. high, 30 ft. long.
8	21.3.1921	S.S. *Hollandia* ...	37° 50′	47° 23′	Berg.
9	6.4.1909	S.S. *Trafalgar* ...	35° 54′	31° 47′	Two pieces 18 ins. in diameter.
10	11.4.1914	S.S. *Erodiade* ...	32° 55′	62° 11′	Apparently river ice about the size of a lifeboat.
11	24.4.1916	S.S. *Communipaw*	49° 05′	36° 48′	4 ft. high, 50 ft. wide, and 100 ft. long.
12	4.4.1921	S.S. *Hollandia* ...	43° 35′	35° 57′	Large berg.
13	16.4.1926	Trawler *Orizaba* ...	61° 03′	10° 30′	Floating ice about 40 ft. long, and 3 ft. high.
14	7.4.1930	S.S. *La Crescenta*	42° 24′	34° 22′	Small berg about 20 ft. in diameter.
15	27.4.1935	S.S. *Cochrane* ...	28° 44′	48° 42′	Small berg.
16	20.5.1907	S.S. *Lord Landsdowne.*	31° 00′	38° 00′	Two small pieces 6 ft. by 6 ft. and 12 ft. by 4 ft. out of water.
17	6.5.1908	S.S. *Oceano* ...	150–200 miles North of Bermuda.		Pieces.
18	27.5.1909	S.S. *Reventazon* ...	32° 28′	44° 10′	60 ft. long, 10 ft. high.
19	15.5.1911	S.S. *Camillo* ...	10 miles East of Nantucket Shoal Lt.-V.		Small berg.
20	11.5.1914	S.S. *Indradeo* ...	42° 18′	62° 43′	Large slabs of field ice and growlers 100–150 ft. long, 5 ft. out of water.
21	17.5.1915	S.S. *Pola*	38° 16′	61° 50′	Some field ice.
22	15.5.1920	U.S. Hyd.,Bulletin	45° 11′	36° 42′	Berg.
23	27.5.1930	S.S. *Valperga* ...	40° 37′	37° 50′	Iceberg about 16 ft.high. with growlers.
24	15.5.1935	M.V. *Lochmonar* ...	33°43½′	48° 47′	Growler, 90 ft. by 25 ft. by 3 ft.
25	25.6.1886	Brig. *Blanch* ...	48° 40′	15° 22′	Large berg.
26	5.6.1907	S.S. *Kingswell* ...	32° 37′	64° 25′	Several bergs.
27	–.6.1907	Bque. *Silverstream*	80 miles West of Fastnet.		Berg.
28	11.6.1912	S.S. *Valetta* ...	37° 30′	74° 24′	Three pieces of ice.
29	7.6.1913	S.S. *Holtby* ...	39° 35′	64° 50′	Berg 10 ft. high.
30	27.6.1915	S.S. *Stella* ...	36° 28′	57° 45′	Small piece.
31	30.6.1921	U.S. Navy Dept.	33° 20′	49° 16′	Berg 10 ft. high.
32	16.6.1924	S.S. *West Irmo* ...	38° 03′	63° 20′	Growler.
33	25.6.1926	S.S. *Baxtergate* ...	30° 20′	62° 32′	Large piece about 30 ft. long and 15 ft. wide, showing about 3 ft. above water.
34	2.6.1934	M.V. *Beaulieu* ...	30° 50′	45° 06′	Small berg, 20 ft. by 8 ft. by 3 ft. above water.
35	–.7.1890	S.S. *Slavonia* ...	48° 53′	24° 11′	Last remnants of berg.
36	–.7.1902	Two reports by fishermen.	56° 30′ (appx.).	6° 30′	40-50 ft. long, 15 ft. wide, 2 ft. 6 ins. out of water.
37	31.7.1909	S.S. *Shimosa* ...	36° 59′	30° 01′	25 ft. long, 3 to 8 ft. wide.
38	10.7.1913	S.S. *Lothian* ...	37° 27′	36° 48′	Piece, 6 ft. high, 50 ft. in circumference.
39	18.7.1916	U.S. Hyd.,Bulletin	32° 09′	54° 26′	Piece of berg, 3 or 4 ft. out of water.
40	23.7.1916	S.S. *San Giorgio* ...	42° 09′	63° 24′	Berg 60 ft. long.
41	23.7.1918	U.S. Hyd.,Bulletin	44° 25′	35° 01′	Large berg.
42	18.7.1921	,, ,,	44° 30′	39° 26′	Small berg about 15 ft. square.
43	21.7.1921	,, ,,	39° 09′	40° 39′	Berg.
44	31.7.1921	,, ,,	37° 37′	27° 29′	Berg.
45	10.7.1926	S.S. *Chelatros* ...	42° 42′	36° 45′	Two pieces of ice.
46	16.7.1933	S.S. *Rein*	52° 32′	22° 00′	Small piece of ice about 25 ft. long, 12 ft. wide.
47	12.8.1903	S.S. *Saxon Prince*	37° 52′	71° 30′	Piece, 3 ft. high, 40 ft long.
48	7.8.1908	S.S. *Caronia* ...	50° 31′	18° 55′	Two pieces, 10 ft. square and 15 ft. square.
49	2.8.1909	S.S. *Shimosa* ...	37° 16′	42° 06′	Piece, 18 ft. by 5 ft., 2 ft. out of water.
50	14.8.1912	S.S. *Ulstermore* ...	43° 55′	39° 16′	Piece.
51	27.8.1912	S.S. *Lux*	42° 30′	15° 26′	50 ft. square, 4 ft. out of water.
52	10.8.1915	S.S. *St. Louis* ...	41° 02′	48° 00′	Berg.
53	16.8.1915	S.S. *St. Leonards*	41° 09′	56° 43′	Berg.
54	21.8.1915	S.S. *Strathgarry* ...	40° 46′	68° 20′	Growler.
55	–.8.1915	,, ,,	39° 00′	46° 20′	Piece, 20 ft. long, 4 ft. high.
56	29.8.1920	U.S. Hyd.,Bulletin	40° 30′	47° 52′	Berg.
57	2.9.1883	Bque. *Olivette* ...	35° 40′	30° 00′	Lump of ice.
58	–.9.1895	S.S. *Gulf of Taranto*	36° 35′	71° 36′	Two bergs 30 ft. high, 300–400 ft. long, and much field ice over two miles area.
59	19.9.1906	S.S. *Lord Landsdowne.*	54° 20′	22° 00′	Small berg 20 ft. by 6 ft.

No.	Date.	Source of Report.	Position of ice.		Remarks.
			Latitude N.	Longitude W.	
60	10.9.1908	S.S. *Deutschland* ...	45° 28′	27° 18′	Two small bergs and one large.
61	6.9.1920	U.S. Hyd., Bulletin	47° 10′	38° 04′	Bergs.
62	2.9.1922	S.S. *Hallgjerd* ...	50° 00′	40° 05′	Berg.
63	15.9.1922	S.S. *Empress of Britain.*	52° 52′	40° 12′	Large berg.
64	3.9.1923	S.S. *Djambi* ...	40° 10′	31° 36′	Piece of ice about 30 ft. long, 1½ft. out of water.
65	15.10.1883	S.S. *Elenora* ...	37° 00′	18° 00′	Piece of ice.
66	8.10.1912	S.S. *Putney Bridge*	35° 15′	44° 50′	Small berg 35 ft. long, 6 ft. high.
67	27.10.1916	S.S. *Montreal* ...	51° 17′	41° 17′	Small berg.
68	2.10.1918	U.S. Hyd., Bulletin	50° 10′	40° 50′	Large berg.
69	19.10.1920	,, ,,	45° 22′	40° 09′	Berg.
70	19.10.1920	,, ,,	45° 24′	40° 07′	Berg.
71	17.10.1921	S.S. *Mount Vernon*	48° 23′	42° 19′	Berg about 70 ft. high, 400 ft. long.
72	6.10.1922	S.S. *Christian Krogh.*	50° 43′	40° 42′	Berg 60 ft. high.
73	7.10.1923	S.S. *Eastern Dawn*	40° 46′	65° 54′	Large growler about 100 ft. square.
74	23.10.1927	Trawler, *Grecian Empire.*	30 miles E.S.E. of the Outer Skerries, Shetland Islands.		Piece of ice 100 ft. long, 6 ft. above water.
75	3.10.1934	S.S. *Rhexenor* ...	36° 53′	29° 13′	Growler, approx. 20 ft. by 4 ft.
76	4.10.1934	S.S. *Imperial Valley.*	36° 16′	29° 26′	Growler, approx. 15 ft. by 3 ft.
77	7.11.1922	Cape Race, W/T Station.	47° 38′	40° 04′	Berg and growlers.
78	8.11.1936	S.S. *Defyros* ...	32° 44′	49° 58′	Piece of ice about 60 ft. long, 5 ft. above water.
79	–.12.1903	S.S. *Lord Antrim*	42° 00′	55° 00′	Ice.
80	22.12.1915	S.S. *Carolyn* ...	42° 53′	57° 39′	Large berg.
81	16.12.1920	S.S. *Oriana* ...	43° 53′	44° 39′	Berg.
82	16.12.1927	S.S. *Ascania* ...	47° 52′ (approximate).	40° 50′	Four large bergs.

North Atlantic Tracks.

The suggestion that all ships engaged in the Trans-North Atlantic trade should follow separate routes when eastbound to those used when westbound, was first made by Commander F. M. Maury, U.S.N., in 1855, but it was not until 1875 that his suggestion was adopted. The Cunard Company then laid down specified routes which all their ships were ordered to follow.

On the recommendation of the United States Hydrographic Office these routes were amended in 1891, and seven years later the Trans-North Atlantic Conference was formed consisting of the principal International Shipping Companies engaged in the Trans-North Atlantic trade. The conference, working in conjunction with the United States Coast Guard, revise the tracks from time to time in accordance with Article 39 of the International Convention for the Safety of Life at Sea, 1929.

The tracks are shown on Admiralty Route Chart which is published in two sections.

Chart No. 2058 b showing lane routes south of Ireland and English Channel.

Chart No. 2058 c showing lane routes north of Ireland.

The section of the routes running through the ice region in operation for the month is shown on the ice chart published with each quarterly number and monthly supplement of The Marine Observer.

The particulars of the routes which were last revised in March, 1931, are as follows :—

United States.

Track " A " (Extra Southern).

Westbound.

Will only be brought into operation when necessity arises.

Steer from Fastnet or Bishop Rock on Great Circle course, but nothing South, **to cross the meridian of 47° 00′ W in Latitude 40° 30′ North** thence by either rhumb line or Great Circle to Boston Light Vessel or to a position South of Nantucket Light Vessel.

Eastbound.

Will only be brought into operation when necessity arises.

From the position of 70° 00′ West and 40° 10′ North, or from Boston, steer by rhumb line **to cross the meridian of 47° 00′ West in Latitude 39° 30′ North,** and from this last position nothing North of the Great Circle to Fastnet or Bishop Rock.

Track " B " (Southern).

Westbound.

From 11th April to 30th June (both days inclusive). Except when ice conditions necessitate the use of " A " Track.

Steer from Fastnet or Bishop Rock on Great Circle course, but nothing South, **to cross the meridian of 47° 00′ West in Latitude 41° 30′ North,** thence by either rhumb line or Great Circle to Boston Light Vessel, or to a position South of Nantucket Light Vessel.

Eastbound.

From 11th April to 30th June (both days inclusive). Except when ice conditions necessitate the use of " A " Track.

From the position of 70° 00′ West in 40° 10′, North, or from Boston, steer by rhumb line, **to cross the meridian of 47° 00′ West in Latitude 40° 30′ North,** and from this last position nothing North of the Great Circle to Fastnet or Bishop Rock.

Track " C " (Northern).

Westbound.

From 1st July to 10th April (both days inclusive). Except when ice conditions necessitate the use of " B " track.

Steer from Fastnet or Bishop Rock on Great Circle course, but nothing South, **to cross the meridian of 50° 00′ West in Latitude 43° 00′ North,** thence by either rhumb line or Great Circle to Boston Light Vessel, or to a position South of Nantucket Light Vessel.

Eastbound.

From 1st July to 10th April (both days inclusive). Except when ice conditions necessitate the use of " B " Track.

From the position of 70° 00′ West in 40° 10′ North, or from Boston, steer by rhumb line, **to cross the meridian of 50° 00′ West in Latitude 42° 00′ North,** and from this last position nothing North of the Great Circle to Fastnet or Bishop Rock.

General Instructions.

Vessels bound to or from United States ports **calling at Halifax** have the option of following either the Canadian or United States Seasonal Tracks to or from that port, passing 40 miles South of Sable Island Westbound and 60 miles South of Sable Island Eastbound when proceeding on U.S. Tracks and Canadian Track " D." When proceeding on Canadian Tracks " E " or " F " via Halifax, ships pass North of Sable Island both Westbound and Eastbound.

(Note.—General Instructions Canadian Tracks for vessels bound to or from the North of Ireland.)

Vessels bound direct to Portland (Maine) may follow the Canadian Seasonal Tracks.

When courses are changed at the intersections of meridians any time before or after noon Commanders must note in their logs both distances to and from the meridians that the ship has sailed from noon to noon, and not the distance from the position at noon the day before to the position at noon the day after the meridian is crossed.

The date on which Tracks change is to apply to the meridian of the Fastnet for Westbound steamers and the meridian of 70° 00′ West for Eastbound vessels.

Communications on General Track matters between the British Lines will pass through the Cunard-White Star Line. The Holland America Line will communicate with the Continental Lines, excepting that, during the Ice Season, the Cunard-White Star Line will communicate direct with all Lines.

With regard to proposals for any changes in Tracks, owing to prevalence of ice, the Cunard-White Star Line in Liverpool will decide dates on which changes are to become operative, advising Lines by telegraph. Lines undertake to give immediate instructions to their steamers in accordance with such advices.

Canada.

Track "D."

From 15th February to 10th April (both days inclusive).

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock on Great Circle course **to cross the meridian of 50° West in Latitude 43° North,** thence to Halifax or other Port, passing not less than 40 miles south of Sable Island.

Eastbound.

Steer from Halifax or other port to pass 60 miles south of Sable Island **to cross the meridian of 50° West in Latitude 42° North,** thence on the Great Circle course to Fastnet, Inishtrahull, or Bishop Rock.

Track "E."

From 11th April to 15th May or until the Cape Race Route clear of ice, and December 1st to February 14th.

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock on the Great Circle course **to the meridian of 50° West in 45° 55′ North,** thence to Halifax or the Gulf of St. Lawrence.

(NOTE :—The Donaldson Line reserve the right to cross Longitude 45° West in Latitude 45° North on this track.)

Eastbound.

Steer from Halifax or the Gulf of St. Lawrence **to cross the meridian of 50° West in Latitude 45° 25′ North** thence on the Great Circle course to the Fastnet, Inishtrahull or Bishop Rock.

Track "F."

From 16th May to the opening of Belle Isle Route and to November 30th when not using the Belle Isle route.

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock, on a course 10 miles North of the Great Circle track until approaching Cape Race, then steer a course to pass 10 miles South of Cape Race, thence to Halifax or the Gulf of St. Lawrence.

Eastbound.

Steer from Halifax or the Gulf of St. Lawrence to a position 25 miles South of Cape Race thence on a course 10 miles south of the Great Circle track until approaching Fastnet, Inishtrahull, or Bishop Rock.

Track "G."

Belle Isle route.—From the opening of the Straits of Belle Isle to November 14th.

Westbound.

Steer from Fastnet, Inishtrahull, or Bishop Rock, on a course 10 miles north of the Great Circle track until approaching Belle Isle.

Eastbound.

Steer from Belle Isle on a course 10 miles South of the Great Circle track until approaching Fastnet, Inishtrahull, or Bishop Rock.

General Instructions.

Vessels bound to or from U.S. ports **from or to the north of Ireland** have the option of following either the U.S. or the Canadian Seasonal Tracks D, E and F, remaining on track F during the operative dates of Track G.

On tracks " E " and " F " vessels passing 40 miles south of Sable Island westbound thence to position south of Nantucket and Eastbound from position 40° 10′ North in 70° 00′ West to position 60 miles south of Sable Island.

On track " D " westbound proceeding by rhumb line from position 43° 00′ North in 50° 00′ West to position south of Nantucket and eastbound from position 40° 10′ North in 70° 00′ West to position 42° 00′ North in 50° 00′ West.

Commanders on encountering ice have permission to deviate from these tracks and after the end of October to leave the Belle Isle for the more southerly route at their discretion according to weather conditions. Should vessels on Track " C " bound to or from United States be deviated to Track " B " on account of ice, Canadian vessels will remain on Track " D " for the period prescribed but will have the above option of deviating as necessary in the vicinity of ice areas.

The Lines have the option of continuing the use of the Belle Isle route after November 14th should they wish to do so.

SOUTHERN ICE REPORTS.

During the year 1936.

April.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1936	18	55° 59′ S.	126° 02′ W.	Berg	Length 185 feet, height 136 feet	S.S. *Port Sydney.*
	19	56° 13½′ S.	117° 40′ W.	Berg	Length 300 feet, height 114 feet	do.
		56° 23′ S.	114° 32′ W.	Berg	Length 90 feet, height 318 feet	do.
		56° 13′ S.	114° 32′ W.	Berg	Length 382 feet, height 184 feet	do.
	9	56° 04′ S.	127° 00′ W.	Two bergs	... ...	S.S. *Waimana.*
	11	55° 54′ S.	120° 31′ W.	Two bergs	... ...	do.
	6	55° 56′ S.	109° 04′ W.	Large berg	Length ¼ mile, height 350 feet (approx.), ...	S.S. *Port Caroline.*

May.

No reports.

June.

Year.	Day.	Position of Ice.		Description.	Remarks.	Name of Ship reporting.
		Latitude.	Longitude.			
1936	2	55° 55′ S.	00° 12′ W.	Slush ice	... ...	R.R.S. *Discovery II.*
		57° 34′ S.	00° 08′ W.	Light pancake ice	... ...	do.
		57° 56′ S.	00° 08′ W.	Young pancake ice and slush	... ...	do.
	3	58° 25′ S.	00° 08′ W.	Pancake ice	... ...	do.
		58° 47′ S.	00° 01′ E.	Pancake ice	... ...	do.
	4	From 58° 17′ S. To 57° 53′ S.	01° 33′ E. 2° 13′ E.	Pancake ice	... ...	do.
		57° 30′ S.	3° 35′ E.	Pancake ice	... ...	do.
		56° 46′ S.	5° 01′ E.	Pancake ice	... ...	do.
	5	56° 30′ S.	5° 37′ E.	Pancake ice	... ...	do.
	6	55° 19′ S.	102° 45′ W.	Large berg	Height 300 feet, approximately	M.V. *Waipawa.*

Reports of Ice previous to April, May and June, 1936, will be found in the Marine Observer, Volume XIII, No. 122, p. 61.

WIRELESS WEATHER SIGNALS.

I.—SHIPS' WIRELESS WEATHER SIGNALS.

A full description of the world-wide system of voluntary "Selected Ships" routine weather reports with instructions was given on pp. 36-47 of the January number of this volume of The Marine Observer.

The list which follows contains the latest information of stations to which "A Selected Ships" should report in accordance with those instructions, and stations detailed to intercept or receive reports from "B Selected Ships" also in accordance with those instructions.

To decode these reports, and for information of the system of communication of "Selected Ships," all concerned are referred to the Pamphlet, M.O. 329, concerning which special notice to the masters of British ships will be found on p. 39, paragraphs (27) and (34) of the January 1937 number of The Marine Observer.

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM "A SELECTED SHIPS."

Request for Information.

The attention of Meteorological Services is directed to the invitation given on page 36 of vol. xiv, no. 125, January, 1937.

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
				For Station to call up "Selected Ships."	For "Selected Ships" to report to Station.				
North Atlantic and North Sea.	Portishead.	Lat. 51° 28′ 41″ N. Long. 2° 47′ 30″ W.	**GKU.**	149 kc/s. (2013 metres) and 121 kc/s. (2479 metres) simultaneously	143 kc/s. (2100 metres).	North Sea and Eastern North Atlantic East of Longitude 40° W. but not within 300 miles of station. (*see* Chart of the World.)	Weather London.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"Selected Ships" chosen to report in given order notified by station daily at 2300, 0330, and 1030 G.M.T. Roll call thus—Weather London—call sign of chosen "Selected Ships" to report through GKU at schedule times on 2100 m.
North Atlantic and Mediterranean.	Gibraltar.	Lat. 36° 08′ 32″ N. Long. 5° 20′ 29″ W.	**GYW.**	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Eastern North Atlantic, South of Lat. 37° N. and Mediterranean Sea.	Meteor Gibraltar.	Weather only. No. 3 Supplementary Groups.	All British "A Selected Ships" within area should report in accordance with Schedule.
North Atlantic.	Horta, Azores.	Lat. 38° 32′ N. Long. 28° 38′ W.	**CTG.**	125 kc/s. (2400 metres).	125 kc/s (2400 metres).	Those "A" Selected Ships not in the Roll Call for reporting to Weather London through Portishead, in the Eastern North Atlantic, east of Long. 40° W should report to this station.	Radio Horta.	Weather only, up to seven groups, preferably No. 3 Supplementary Groups.	"A" Selected Ships in the Eastern North Atlantic not on the roll call made through Portishead (described in these notes for Portishead) should report to Horta in accordance with schedule given in the instructions for British "A" Selected Ships.
	Chatham Mass.	Lat. 41° 43′ N. Long. 70° 47′ W.	**WCC.**		142·9 kc/s. (2098 metres).	North Atlantic West of Longitude 40° W.	Observer Washington	Weather only. First four groups of observations taken at 0000 and 1200 G.M.T. only required.	All British "A Selected Ships" within area to address their 0000 and 1200 G.M.T. observations to Observer Washington and their 1800 G.M.T. observations to CQ in accordance with schedule.
	Amagansett (Montauk).	Lat. 41° 00′ N. Long. 72° 03′ W.	**WSL.**						
	Thomaston.	Lat. 44° 01′ N. Long. 69° 13′ W.	**WAG.**						
	Jupiter.	Lat. 26° 42′ N. Long. 80° 02′ W.	**WMR.**						
	Palm Beach.	Lat. 26° 42′ N. Long. 80° 02′ W.	**WOE.**						
South Atlantic.	Slangkop (Cape Town)	Lat. 34° 08′ 46″ S. Long. 18° 19′ 18″ E.	**ZSC**	—	143 kc/s. (2100 metres).	South Atlantic Westward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	Only 0600 G.M.T. observation required. All British "A Selected Ships" within area should report, commencing at 0618 G.M.T.
Red Sea and Indian Ocean.	Port Sudan.	Lat. 19° 36′ 35″ N. Long. 37° 13′ 28″ E.	**STP**	—	143 kc/s.† (2100 metres).	From Suez to Ras Fartak, Ras Hafun, and western limit of Colombo area.	Weather Khartoum.	Weather only. Four universal groups.	All British "A Selected Ships" within area should report in accordance with Schedule. † Alternatively see particulars on p. 68 and use wave length and times for "B Selected Ships."

WIRELESS STATIONS DETAILED TO RECEIVE ROUTINE CODED WEATHER REPORTS FROM “ A SELECTED SHIPS.”

(Continued.)

Ocean.	Station.	Position.	Call Sign.	Frequency and Wave Length.		Area and limits covered by Station.	Telegraphic address of Meteorological Centre.	Information required—Limit of Groups.	Notes.
				For Station to call up “ Selected Ships.”	For “ Selected Ships ” to report to Station.				
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55′ 40″ S. Long. 30° 58′ 50″E.	**ZSD**	—	143 kc/s. (2100 metres).	Indian Ocean S. of 20° S. and Eastward of 25° E. and within a range of about 2,000 miles of station.	Met.	Weather only. Four universal groups and first group of No. 6 Supplementary groups.	Only 0600 G.M.T. observations required. All British “ A Selected Ships” within area should report, commencing at 0618 G.M.T.
	Bombay.	Lat. 19° 04′ 55″ N. Long. 72° 49′ 54″E.	**VWB**	—	143 kc/s. (2100 metres).	Arabian Sea N. of line C. Comorin to Ras Fartak.	Weather.	Weather only. No. 9 Supplementary groups.	See Section (35), p. 40, Janary 1937 number.
	Madras.	Lat. 12° 59′ 17″ N. Long. 80° 10′ 56″E.	**VWM**	—	143 kc/s. (2100 metres).	Bay of Bengal N. of line C. Comorin to Achin Head.	Weather.	Weather only. No. 9 Supplementary groups.	
	Colombo.	Lat. 6° 55′ 14″ N. Long. 79° 52′ 46″E.	**VPB**	143 kc/s. (2100 metres).	143 kc/s. (2100 metres).	Indian Ocean South of a line Ras Fartak, C. Comorin and Achin Head, and within a range of about 1500 miles.	Weather.	Weather only. No. 6 Supplementary groups preferred.	All British “ A Selected Ships ” within area should report in accordance with Schedule.
	Mombasa.	Lat. 4° 03′ 11″ S. Long. 39° 39′ 49″E.	**VPQ**	—	125 kc/s. (2400 metres).	From Ras Hafun to Lat. 20° S. when westward of the Colombo area.	Weather Nairobi.	Weather only. No. 6 Supplementary groups.	All British “ A Selected Ships ” within area should report 0600 G.M.T. observations.
	Perth.	Lat. 32° 01′ 51″ S. Long.115° 49′31″E.	**VIP**	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	Indian Ocean and Southern Ocean between Long. 90° and 135° E.; but not within 100 miles of the coast.	Weather.	Weather only. No. 6 Supplementary groups.	All British “ A Selected Ships ” within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 38, of the January 1937 number.
North Pacific and China Sea.	Cape d’Aguilar, Hong Kong.	Lat. 22° 12′ 39″ N. Long.114°15′11″E.	**VPS**	8330kc/s. (36 metres) or 500 kc/s. (600 metres).	143kc/s.* (2100 metres).	China Sea and North Pacific to about 1,500 miles from station.	Royal Observatory	Weather only No. 9 Supplementary Groups.	All British “ A Selected Ships ” within area should report in accordance with Schedule. *Alternatively see particulars on p. 69 and use wave length and times for “ B Selected Ships.”
South Pacific.	Sydney.	Lat. 33° 46′ 00″ S. Long.151° 03′09″E.	**VIS**	125 kc/s. (2400 metres).	143 kc/s. (2100 metres).	S. Pacific Coral and Tasman Seas and Southern Ocean between Long. 135° and 160° E.; but not within 100 miles of the coast.	Weather.	Weather only. No. 6 Supplementary groups.	All British “ A Selected Ships ” within area should report in accordance with Schedule. Reports not required for observation times not starred on Chart, p. 38, of the January 1937 number.

WIRELESS STATIONS DETAILED TO INTERCEPT ROUTINE CODED WEATHER REPORTS FROM “ B SELECTED SHIPS.”

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
North Atlantic.	Malin Head.	Lat. 55° 21′ 45″ N. Long. 7° 20′ 30″ W.	**GMH**	Weather London.	Weather in four universal groups only.	Station will indicate at 0805 G.M.T. with ordinary traffic calls, the names of British “ B ” Selected Ships and other British ships within range and North of Lat. 54° N., and West of Long. 7° W. who are desired to report weather at routine times. Thus :--Call signs of ships to report weather through GMH.
	Valentia.	Lat. 51° 55′ 48″ N. Long. 10° 20′ 54″ W.	**GCK**	Weather London.	Weather in four universal groups only.	Station will indicate at 0825 G.M.T. with ordinary traffic calls, the names of British “ B ” Selected Ships and other British ships within range, South of Lat. 54° N., and to southward of Ireland West of Long. 7° W., who are desired to report weather at routine times. Thus :—Call signs of ships to report weather through GCK.
North Atlantic and Mediterranean	Gibraltar	Lat. 36° 08′ 32″ N. Long. 5° 20′ 29″ W.	**GYW**	Meteor Gibraltar.	Weather in four universal groups only.	
South Atlantic.	Salinas.	Lat. 0° 37′ 00″ S. Long. 47° 23′ 00″ W.	**PPL**	Meteoro Rio.	Weather only, including supplementary groups.	
	S. Luiz.	Lat. 2° 31′ 28″ S. Long. 44° 16′ 30″ W.	**PXM**			
	Fortaleza.	Lat. 3° 42′ 49″ S. Long. 38° 30′ 56″ W.	**PPC**			
	Natal.	Lat. 5° 46′ 30″ S. Long. 35° 16′ 20″ W.	**PXN**			
	Olinda.	Lat. 8° 00′ 55″ S. Long. 34° 50′ 40″ W.	**PPO**			
	Amaralina.	Lat. 13° 00′ 50″ S. Long. 38° 28′ 27″ W.	**PPA**			
	Abrolhos.	Lat. 17° 57′ 35″ S. Long. 38° 42′ 00″ W.	**PXH**			
	Victoria.	Lat. 20° 18′ 52″ S. Long. 40° 19′ 06″ W.	**PPT**			
	Rio.	Lat. 22° 59′ 19″ S. Long. 43° 11′ 26″ W.	**PPR**			
	Santos.	Lat. 23° 59′ 22″ S. Long. 46° 18′ 18″ W.	**PPS**			
	Florianopolis.	Lat. 27° 35′ 22″ S. Long. 48° 34′ 17″ W.	**PPF**			
	Junccao.	Lat. 32° 03′ 22″ S. Long. 52° 08′ 13″ W.	**PPJ**			
Red Sea and Indian Ocean.	Port Sudan	Lat. 19° 36′ 35″ N. Long. 37° 13′ 28″ E.	**STP**	Weather Khartoum.	Weather only, four universal groups.	
Indian Ocean.	Jacobs (Durban).	Lat. 29° 55′ 40″ S. Long. 30° 58′ 50″ E.	**ZSD**	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary groups.	
	Algoa Bay (Port Elizabeth).	Lat. 33° 57′ 16″ S. Long. 25° 35′ 30″ E.	**ZSQ**	Met.	Weather only, 4 universal groups and first group of No. 6 Supplementary groups.	

WIRELESS STATIONS DETAILED TO INTERCEPT ROUTINE CODED WEATHER REPORTS FROM "B SELECTED SHIPS."

(Continued.)

In cases where routine weather reports made to CQ might not be received by the appropriate station within range, indicated in this list, they should be made to that station by call sign, but so that they may be readily intercepted by all ships. 600 m. is used throughout.

Ocean.	Station.	Position.	Call Sign.	Telegraphic address of Meteorological Centre desiring information.	Information desired.	Notes.
Indian Ocean (*continued*).	Calcutta.	Lat. 22° 33′ 31″ N. Long. 88° 20′ 16″ E.	**VWC**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Rangoon.	Lat. 16° 45′ 57″ N. Long. 96° 11′ 51″ E.	**VTR**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Madras.	Lat. 12° 59′ 17″ N. Long. 80° 10′ 56″ E.	**VWM**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	
	Bombay.	Lat. 19° 04′ 55″ N. Long. 72° 49′ 54″ E.	**VWB**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	See Section (35), p. 40, January 1937 number.
	Karachi.	Lat. 24° 51′ 05″ N. Long. 67° 02′ 32″ E.	**VWK**	Weather.	Weather only, preferably No. 9 Supplementary Groups.	See Section (35), p. 40, January 1937 number.
	Matara.	Lat. 6° 01′ 07″ N. Long. 80° 35′ 39″ E.	**GZP**	Weather.		
	Mombasa.	Lat. 4° 03′ 11″ S. Long. 39° 39′ 49″ E.	**VPQ**	Weather Nairobi.		
	Dar-es-Salaam.	Lat. 6° 50′ 38″ S. Long. 39° 17′ 24″ E.	**ZBZ**	Weather Nairobi.		
	Mauritius.	Lat. 20° 23′ 41″ S. Long. 57° 35′ 25″ E.	**VRS**	Observatory Mauritius.	Weather only, 4 universal groups and first of No. 6 Supplementary Groups.	
	Geraldton.	Lat. 28° 47′ 15″ S. Long. 114° 36′ 24″E.	**VIN**	Weather.	Weather only, preferably No. 6 Supplementary Groups.	
	Esperance.	Lat. 33° 52′ 40″ S. Long.121° 53′ 34″ E.	**VIE**			
Indian Ocean and China Sea.	Penaga (Penang).	Lat. 5° 32′ 02″ N. Long. 100° 22′ 51″E.	**VPX**	Obs. Weather Singapore.	Weather only, preferably No. 9 Supplementary Groups.	
	Paya Lebar (Singapore).	Lat. 1° 20′ 26″ N. Long. 103° 53′ 20″E.	**VPW**			
North Pacific and China Sea.	Cape d'Aguilar, Hong Kong.	Lat. 22° 12′ 39″ N. Long. 114° 15′ 11″ E.	**VPS**	Royal Observatory.	Weather only, preferably No. 9 Supplementary Groups.	
South Pacific.	Auckland.	Lat. 36° 50′ 37″ S. Long. 174° 46′ 08″ E.	**ZLD**	Weather Wellington.	Weather only, preferably No. 9 Supplementary Groups.	
	Wellington.	Lat. 41° 16′ 26″ S. Long.174° 45′ 55″ E.	**ZLW**			
	Awarua.	Lat. 46° 30′ 47″ S. Long.168° 22′ 24″ E.	**ZLB**			
	Chatham Island.	Lat. 43° 57′ 28″ S. Long.176° 34′ 25″ W.	**ZLC**			
	Rarotonga.	Lat. 21° 11′ 52″ S. Long.159° 48′ 52″ W.	**ZKR**			
	Apia.	Lat. 13° 50′ 17″ S. Long.171° 49′ 42″ W.	**ZMA**			
	Thursday I.	Lat. 10° 35′ 14″ S. Long.142° 12′ 43″ E.	**VII**	Weather.	Weather only, preferably No. 6 Supplementary Groups	
	Townsville.	Lat. 19° 16′ 09″ S. Long.146° 49′ 47″ E.	**VIT**			
	Brisbane.	Lat. 27° 25′ 34″ S. Long.153° 07′ 19″ E.	**VIB**			
	Melbourne.	Lat. 37° 46′ 56″ S. Long.144° 52′ 09″ E.	**VIM**			
	Adelaide.	Lat. 34° 51′ 14″ S. Long.138° 31′ 55″ E.	**VIA**			

II.—WIRELESS WEATHER SIGNALS.

Bulletins.

It is necessary to make careful distinction between wireless weather reports and weather forecasts.

A wireless weather report is a statement, in plain language or code, of the observed conditions prevailing at a place at a given time.

A weather forecast is a statement, usually in plain language, of weather which may be expected at a place or over an area in the near future.

For forecasts issued to shipping by wireless it is usual to publish full descriptions giving abbreviated names of areas with prescribed limits and the length of period; if such published description is not given, the place, or area and the period to which the forecasts apply are included in the message.

BRITISH ISLES.

Development of Weather Bulletins to aid Navigation.

The first weather bulletin for the British coasts broadcast to aid navigation was a message giving a forecast issued by the Admiralty at the end of the Great War.

In 1921 the principle of broadcasting weather reports of observations made at coast stations was first adopted by the Meteorological Office in a message made through Poldhu W/T station in Cornwall, entitled the " Western Seaboard " Message, which gave reports from five coast observing stations in code, and a forecast for the western coasts of the British Isles. A pamphlet was published entitled " Weather Forecasting in the Eastern North Atlantic and Home Waters for Seamen " which explained simply the modern methods of weather forecasting by the use of weather charts, and how to draw isobars.

After obtaining the views of many of the masters, mates and skippers of every type of vessel navigating the eastern North Atlantic, North Sea, and waters adjacent to the British Isles, the British Weather Shipping Bulletin was adopted and brought into use on 1st January, 1924.

At the International Conference on Safety of Life at Sea in 1929, this British Weather Shipping Bulletin was cited by foreign shipmasters as giving the weather information from the shore most desirable to aid navigation.

The station reports in the British Weather Shipping Bulletin, together with routine weather reports received or intercepted direct from Selected Ships, or with the reports broadcast in the Weather Shipping Bulletin of Germany or Sweden, afford the desirable information for constructing weather charts on board ships navigating these waters.

After the British Weather Shipping Bulletin had been in use for seven years, exhaustive enquiry was made, and the views and experience of a great many masters, mates, skippers, and others, in all types of vessels was again obtained, with the result that but for the addition of a Northern Area and modification of Districts therein, the Bulletin remained practically unaltered.

From time to time, the officers in some larger merchant ships have advocated a more elaborate synoptic message; but so far as information goes the British Weather Shipping Bulletin, taken in conjunction with the W/T and R/T Gale Warnings, continues to meet the needs of the majority of shipping, and more particularly smaller vessels whose need of weather intelligence from the shore to promote safety of life at sea is greater.

In September, 1935, the Admiralty adopted a Fleet Synoptic Message for the Home Station, which is compiled daily at the Meteorological Office, London, and made through the Admiralty W/T. stations at Cleethorpes and Gibraltar.

This message may be used with advantage by liners in the Eastern North Atlantic; and full particulars were given in Admiralty Notice to Mariners No. 1374, published on 17th August, 1935, and which is incorporated in the Admiralty List of W/T Signals.

Throughout these pages, in the April, July and October numbers of The Marine Observer for each maritime country, in geographical order where established, Weather Shipping Bulletins founded on the same principles as the British Weather Shipping Bulletin will be given; and where not available, such Bulletins as are the most appropriate for shipping.

Only the International Ships' Wireless Weather Telegraphy Code is given in The Marine Observer.

Those who desire information of the more elaborate bulletins and synoptic messages which are issued for the use of meteorologists in their specialized work, and for aiding aerial navigation and so forth, are referred to the " Admiralty List of W/T Signals " which contains the most complete information of all W/T signals.

In short " Weather Signals " in The Marine Observer is an endeavour to provide concise information of the signals which are generally most practical for the purposes of the merchant navy.

" Weather Shipping " Bulletin.

Wireless Telegraphy (C.W.)

W/T Station, **Rugby.** Latitude 52° 21′ 59″ N. Longitude 1° 11′ 12″ W. Call Sign **G.B.R.**

Wavelength 18,750 metres C.W. (16 kc/s.).

Times of transmission 0910 G.M.T. and 2133 G.M.T.

The message issued at 0910 G.M.T. contains 0700 G.M.T. observations. The message issued at 2133 G.M.T. contains 1800 G.M.T. observations.

During the time of S.O.S. lookout, from 0915 to 0918 G.M.T. there will be a pause in the transmission of the signal.

These messages are preceded by the words " Weather Shipping " and consist of seven parts. Part II is in code, the remaining parts in plain language.

Part I is a brief general statement which will generally provide information of the atmospheric pressure systems which influence the weather in the region dealt with by this Bulletin.

Part II is a weather report in code giving actual observations at ten British coast stations and two foreign stations.

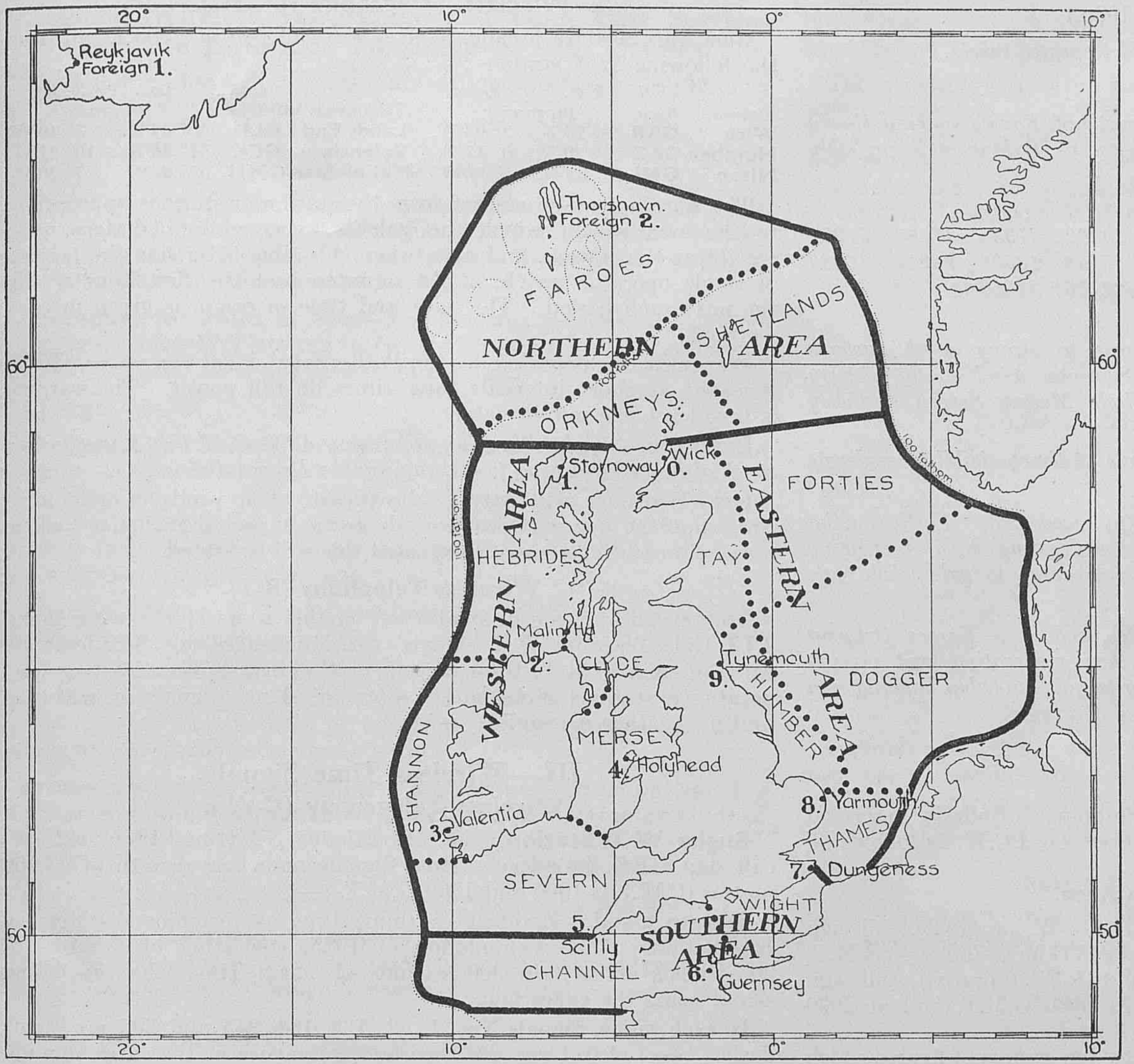
For full information for decoding see next page, also the Pamphlet, M.O. 329, " Decode for use with the International Code for Wireless Weather Messages from Ships (Fourth Edition)," obtainable from H.M. Stationery Office, price 6d.

Parts III, IV, V and VI are forecasts of wind and visibility for the 12 hours following the time of shore observations for the areas shown upon the Chart on p. 71.

Part VII commencing " Outlook " is a brief general statement of weather expected after the period of the forecasts.

Note.—In order to avoid ambiguity between the words Ireland and Iceland the latter word is always repeated whenever it occurs in Part I.

Chart Showing Stations, Forecast Areas and Districts.



WESTERN AREA.

The sea and coasts eastward of the 100 fathom line from the latitude of Cape Wrath to Scilly.

DISTRICTS.

HEBRIDES—That part of Western which lies N. and W. of Bloody Foreland, Rathlin I. and Islay.
SHANNON—West coast of Ireland from Bloody Foreland to the Fastnet.
SEVERN—South coast of Ireland Bristol Channel and approaches.
MERSEY—The Irish Sea and approaches.
CLYDE—The North Channel and approaches to Clyde.

SOUTHERN AREA.

The English Channel from S. Foreland to the 100 fathom line.

DISTRICTS.

CHANNEL—West of St. Albans.
WIGHT—East of St. Albans.

EASTERN AREA.

The North Sea southward of line Duncansby Head to Utsire, to the Straits of Dover.

DISTRICTS.

THAMES—Thames estuary and its approaches.
HUMBER—East coast from Haisborough to Longstone.
TAY—East coast of Scotland, including Moray Firth.
FORTIES—Eastward to 100 fathom line and N. of Longstone to Naze.
DOGGER—Eastward to coast of Denmark and S. of line Longstone to Naze.

NORTHERN AREA.

Northward of latitude of Cape Wrath and of line Duncansby Head to Utsire, to the bank of soundings north of the Faroes in the west, and to north east extremity of the 100 fathom line in the east. Westward of the 100 fathom line to Bill Baileys Bank.

DISTRICTS.

ORKNEYS—Orkneys and north-westward to the 100 fathom line.
SHETLANDS—Shetlands and eastward to the 100 fathom line.
FAROES—That part of the Northern Area to the northward of the 100 fathom line.

Explanation of Chart.

The numbers alongside the names of the stations indicate their code number (in the event of any station being substituted, the name of the substitute will be given in the message in place of this figure until such time as correction has been adequately made in Notices to Mariners and in THE MARINE OBSERVER).

The boundaries of the areas are defined by the plain black lines and the coast line.

These areas are sub-divided into districts, named after islands, rivers or banks within them, so that they may be readily memorised.

For instance the district in the neighbourhood of the Long Forties is termed " Forties."

The boundaries of these districts should only be taken as an approximate indication of their extent.

These districts are for the purpose of giving information of different weather within an area, without unduly lengthening the wording of a message. When similar weather is expected all over an area, these district names will not be used.

Description of Station Reports given in Part II of the Bulletin and Instructions for Decoding.

These reports only contain an identifying number of the stations from which they originate, and just those elements which are most essential for the purpose of the mariner, viz., the true direction of the wind, and its force, the barometer and how it has recently changed, the visibility to seaward, and the weather.

The observations are made at fixed times, viz., 0700 G.M.T. and 1800 G.M.T.

Instructions for Decoding.

These reports are made by means of the code tables of the International Code for wireless weather messages from ships, in five figure groups which are paired, each pair of groups giving a complete report for a station.

To decode these stations' reports the tables given in M.O. 329 are required (DECODE FOR USE WITH THE INTERNATIONAL CODE FOR WIRELESS WEATHER MESSAGES FROM SHIPS (Fourth Edition), obtainable from H.M. Stationery Office, price 6d.).

The Key Letters of the International Ships Wireless Weather Telegraphy Code are fully described on page 44 of the January, 1937, number and in M.O. 329.

The following is a brief description of the Key Letters used for the station reports in this bulletin.

First Group of Pair :—$\mathrm{I_N}$APPV meaning :—

$\mathrm{I_N}$ = Station. British stations from 1 to 9 and 0, and foreign stations 1 and 2, prefixed by the word " foreign " (*see* Chartlet), also page 29 of M.O. 329 (Fourth Edition).
A = Barometric tendency.
PP = Barometric pressure.
V = Visibility. Caution is necessary in the use of these visibility reports owing to the conditions of view to seaward at some stations.

Second Group of Pair is arranged, in accordance with International agreement, similar to the third group of Selected Ships' reports, *i.e.*—D D F w w meaning :—

DD = Wind Direction. F = Wind force. w w = Weather.

In all cases when a figure cannot be given, a hyphen ▬ ▪ ▪ ▪ ▪ ▬ is given to preserve the order.

Sample Message.

(28th December, 1930.)

Call Sign :—*CQ CQ CQ GBR GBR GBR (repeated twice).*

Weather Shipping.

General Statement.—Deep depression north of Faroes moving slowly northeast stop Intense depression north-west of Ireland will probably move east-north-east.

Station Reports,

10877 20301 28856 09360 30868 20402 47935 17760 57996
18902 66117 16401 75127 20602 85106 18502 96977 16360
00898 18601 Foreign 12847 08102 22726 22660

Forecast.

Western Area. Hebrides wind moderate to strong south easterly or variable visibility moderate to good Shannon wind south westerly veering fresh to strong visibility good Clyde Mersey Severn southerly gale visibility moderate to good.

Southern Area. Southerly gale whole gale at times visibility moderate to good.

Eastern Area. Visibility moderate to good stop Forties wind southwest strong to gale backing and moderating then increasing remainder Eastern Area wind southerly increasing to gale whole gale in places.

Northern Area. Visibility moderate to good stop Faroes Orkneys wind southwest to west strong to gale then moderating and veering northwest Shetlands wind southwest strong to gale probably backing and moderating then increasing.

Outlook strong winds or gales.

(I.C.W.)

Certain portions of the "Weather Shipping" Bulletin described above are broadcast by coast W/T stations on I.C.W. as follows :—

For the Western Area.

Valentia. Lat. 51° 56′ N., Long. 10° 21′ W. (approx.), call sign **GCK,** wavelength 600 metres I.C.W. At 0948 G.M.T. and 2048 G.M.T.

Seaforth. Lat. 53° 28′ N., Long. 3° 01′ W. (approx.), call sign **GLV,** wavelength 600 metres I.C.W. At 0930 G.M.T. and at 2030 G.M.T.

Commencing **Western Area** followed by ten groups of figures which indicate observations made at the five stations numbered 1 to 5 in the "Weather Shipping" Bulletin followed by the word **Forecast,** after which the 12-hour forecast for the Western Area will be given.

For the Southern Area.

Niton. Lat. 50° 35′ N., Long. 1° 17′ W. (approx.), call sign **GNI,** wavelength 600 metres I.C.W. At 0930 G.M.T. and at 2030 G.M.T.

Commencing **Southern Area** followed by six groups of figures which indicate observations made at the three stations numbered 5, 6 and 7 in the "Weather Shipping" Bulletin, followed by the word **Forecast,** after which the 12-hour forecast for the Southern Area is given.

For the Eastern Area.

Cullercoats. Lat. 55° 02′ N., Long. 1° 26′ W. (approx.), call sign **GCC,** wavelength 600 metres I.C.W. At 0948 G.M.T. and at 2048 G.M.T.

Commencing **Eastern Area,** followed by eight groups of figures which indicate observations made at the four stations numbered 7, 8, 9 and 0 in the "Weather Shipping" Bulletin, followed by the word **Forecast,** after which the 12-hour forecast for the Eastern Area is given.

Wireless Telephony (R/T).

For the information of small craft unable to receive the foregoing W/T signals, appropriate messages are broadcast by word of mouth, R/T from certain stations of the British Broadcasting Corporation.

During the forenoon, Parts I, III, IV, V, VI and VII of the British Weather Shipping Bulletin.

During the evening a forecast of weather for the regions near the coasts of the British Isles.

Details as to stations, wavelength and times are given in the "Radio Times" and the daily press.

Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.).

Gale warnings are broadcast on a wave of 600 m. (500 kc/s), from the following W/T stations :—

Station.	*Call Sign.*	Lat. (approx.)	Long. (approx.)	*Station.*	*Call Sign.*	Lat. (approx.)	Long. (approx.)
Wick	**GKR**	58° 26′N.	3° 06′W.	**Lands End**	**GLD**	50° 07′N.	5° 40′W.
Humber	**GKZ**	53° 20′N.	0° 17′E.	**Valentia**	**GCK**	51° 56′N.	10° 21′W.
Niton	**GNI**	50° 35′N.	1° 17′W.	**Malin Head**	**GMH**	55° 22′N.	7° 20′W.

The warnings are broadcast from the station or stations appropriate to the area within which the gale is expected immediately upon receipt at the station, and also, when this time is outside the periods of single operator watch, at 18 minutes past the first hour within the next such period. The date and time of origin is given in each warning.

Warnings are preceded by the W/T safety signal ▬ ▬ ▬ **(TTT)** repeated at short intervals three times on full power. The warning is broadcast one minute later.

Example—" *Gale Warning Thursday* 1230 *G.M.T. Easterly Gale south of line Spurn head to Galway and in Dogger district.*"

Gale Warnings will only be broadcast when winds of gale force (force 8 of the Beaufort Scale) or above are expected; when a "whole gale" (force 10 or above) is expected this will be stated.

Wireless Telephony (R/T).

For the information of small craft unable to receive the foregoing **TTT** Gale Warning W/T signals, these messages are broadcast by word of mouth, R/T, from certain of the British Broadcasting Corporation's stations immediately after the Time Signals or with the routine weather messages.

III.—Wireless Time Signals.

Wireless Telegraphy (C.W.).

Rugby W/T Station, Lat. 52° 21′ 59″ N., Long. 1° 11′ 12″ W. call sign **GBR,** broadcasts Time Signals on a wavelength of 18,750 metres (C.W.) at 1000 and 1800 G.M.T. :—

System Used.—Modified rhythmic type as recommended by the International Time Commission of 1925, consisting of a series of 306 signals emitted in 300 seconds of Mean Time, the concluding signal being the exact hour.

In each series, Signals Nos. 1, 62, 123, 184, 245 and 306 are single dashes (▬) of 0·4 sec. duration and commence at the exact minute. Each dash is followed by 60 dots (▪) of 0·1 sec. duration.

The commencement of successive signals, whether dot or dash, are equally spaced at intervals of 60/61 parts of one second of Mean Time, *i.e.* :—

G.M.T. h.	m.	s.	Signal.		
9 or 17	55	00	1st signal a dash (▬)	followed by 60 dots (	▪▪▪▪ etc.).
,,	56	00	62nd do.	do.	do.
,,	57	00	123rd do.	do.	do.
,,	58	00	184th do.	do.	do.
,,	59	00	245th do.	do.	do.
10 or 18	00	00	306th signal, a dash (▬).		

This type of time signal will enable chronometer comparisons of extreme accuracy to be obtained, the method employed being to count the number of intervals from the first dash (▬) until coincidence occurs between one of the rhythmic signals and the beat of the chronometer. (There being two such coincidences, 29½ or 30½ seconds apart, every minute.)

It is not necessary actually to count the signals.

Write down :—

(1) The chronometer time of the tick (whole or half second) immediately preceding the *first* dash.

(2) The chronometer times of coincidences (seconds only need be written down).

The difference between these (the "Elapse Time") increased by 0·5 sec. when it is not a whole number, gives the Rhythmic "Interval Number" from which the corresponding correction can be obtained.

NOTE.—An article entitled "Greenwich Time" describing how these signals are made, of great interest to navigators, will be found on pp. 159-167, Vol. V, No. 56.

Special Service by Payment.

Additional Wireless Telegraphic and Land Line Services which are performed for shipping, with charges.

The following list indicates the information which may be obtained on request, at any time, night or day.

Weather Forecasts.

Special weather forecasts can be made at the Meteorological Office for a period of 24 hours for areas within the region contained between the parallels of 70° N. and 35° N. and between the meridians of 12° W. and the coast of the Continent of Europe.

Procedure for Ships at Sea.—Request weather forecast through the nearest coast W/T station in Great Britain or Ireland, specifying required date and area, and giving ship's name.

Charge.—7s. 6d.

Procedure for Shipowners and Masters of Ships in port about to sail.—Telephone to Meteorological Office (Telephone No. Holborn 3434, Extension 174) or send **reply paid** telegram to Weather, Phone, London (allowing 10 to 20 words as necessary for reply), requesting weather forecast and specifying date and area for which required, and address to which to be sent.

Charges—None, if the information is required immediately and the reply paid telegram covers the telegraphic charges.

If the information is required for a specified day in advance, or for a number of days, a registration fee of 6d. per week (minimum fee 6d.) in addition to cost of telegrams. In this case application for the forecasts may be made by letter.

Procedure for Salvage Officers and others requiring warning of gales or winds from specified directions, or particular kinds of weather.—Write to the Meteorological Office, London, stating the position or locality and the warnings required, with the period.

Charge.—2s. 6d. for each message, plus telegraphic charges.

Note.—For Home waters the Areas and Districts used in the British "Weather Shipping" Bulletin may be used with advantage to indicate the localities for which forecasts are required.

Weather Reports.

Information of the actual local weather conditions prevailing at any of the following stations may be obtained :—

Aberdeen.
*Bangor, Co. Down.
Barry Island.
Beachy Head.
*Broughness.
Cape Wrath.
†Dover Pier.
Dunnet Head.
*Holyhead.
Hoylake.
Inchkeith.
Kildonan.
Lizard.
Mersey Hb.
*Mumbles.
Needles.
*Rame Head.
†Portpatrick.
Prawle Point.
Southend.
Spurn Head.
†St. Ann's Head.
St. Catherine's Point.
*Stornoway.
*Torr Head.
†Tynemouth.
†Wick.

* These stations cannot give information about barometric pressure.

† Reports from these stations include information as to the state of the sea.

Procedure for Ships at Sea.—Request through nearest W/T coast station in Great Britain or Ireland, specifying the name of the station for which observed weather conditions are required.

Charge.—7s. 6d.

HOLLAND.

II.—Weather Shipping Bulletin.

Wireless Telephony (R/T).

Off Dutch Coast.

Scheveningen R/T Station, approximate Latitude 52° 06′ N., Longitude 4° 16′ E.

Call sign—**PCF.**

Wavelength—1205 m. R/T.

Times of transmission :—

	Winter.	Summer.
Weekdays	0850 and 1940 G.M.T.	0850 and 1925 G.M.T.
Sundays and Holidays	0910 and 1940 G.M.T.	0810 and 1925 G.M.T.

The message issued in the morning is based on 0700 G.M.T. observations.

The message issued in the evening is based on 1800 G.M.T. observations.

The messages are preceded by the words "Weerbericht voor de scheepvaart" and consist of four parts.

Part I, en clair (Dutch).

Brief description of change of pressure, visibility, wind, and weather.

Part II.

Weather report in code giving actual observations at the stations hereunder :—

List of Observation Stations.

Index Number.	*Station.*	*Position (approx.) Latitude N.*	*Position (approx.) Longitude E.*
1	Den Helder	52° 58′	4° 45′
2	Vlissingen	51° 26′	3° 34′
3	Terschellingerbank Lt. V. ...	53° 27′	4° 47′
4	Maas Lt. V.	52° 02′	3° 53′
5	Noord-Hinder Lt. V.	51° 39′	2° 34′

The key and code used is exactly the same as that used for the British "Weather Shipping" Bulletin, see page 71.

Part III, en clair (Dutch).

Forecast of visibility, wind, and weather, for 12 hours for the Dutch coast areas extending to about 30 miles off the coast :—

North (N. of Kamperduin), Middle (Kamperduin to Hook of Holland), South (S. of Hook of Holland).

Part IV, en clair (Dutch).

Gale warnings for the Dutch coast divided when necessary into the areas given in Part III above.

Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.).

North Sea.

Scheveningen W/T Station, Latitude 52° 06′ N., Longitude 4° 16′E. (approx.), call sign **PCH,** makes gale warnings on receipt and following the end of the next compulsory 3 minutes' silence period, both in Dutch and English, and also at 1230 and 2030 G.M.T. Wavelength used is 600 metres (I.C.W.).

The warning commences with the letters "**KNMI**," and is transmitted first slowly, and then repeated quickly.

Wireless Telephony (R/T).

Scheveningen R/T Station, call sign **PCF,** makes gale warnings which form Part IV of the Dutch Weather Shipping Bulletin explained above.

IV.—Wireless Ice Warnings.

Wireless Telegraphy (I.C.W.)

Scheveningen W/T Station, call sign **PCH,** broadcasts, when necessary, information of ice conditions in certain Dutch harbours and approaches, daily as follows :—

At 1230 and 2030 G.M.T. after the Storm Warning (if issued). Wavelength 600 metres (I.C.W.).

The ice report is broadcast in a local code and will contain the ice conditions for the following harbours and in the following sequence :—

Delfzijl (Ems).
Harlingen (Zuider Zee).
Amsterdam (North Sea Canal).
Zaandam (Voorzaan).
Helder (Zuider Zee).
Rotterdam (Waterway).
Dordrecht (North).
Dordrecht (Mallegat).

The report commences with the words "Ijsbericht, Ice report."

The broadcast of the ice reports will begin when navigation is closed to small steamers and seagoing motor vessels at any of the harbours mentioned in the list, and will cease when navigation is re-opened.

GERMANY.

II.—Weather Shipping Bulletin.

Wireless Telegraphy (I.C.W.).

North Sea.

Norddeich W/T station approximate Latitude 53° 36′ N., Longitude 7° 09′ E.

Call sign—**DAN.**

Wavelength—677 m. I.C.W.

Times of Transmission—1020 and 2130 G.M.T.

The message issued at 1020 is based on 0700 G.M.T. observations. The message issued at 2130 is based on 1800 G.M.T. observations.

The messages are preceded by the words " Seewetter Nordsee " and consist of two parts.

Part I is a weather report in code giving actual observations at the stations hereunder.

Station No.	*German Station.*	*Position.*	*Station No.*	*Foreign Station.*	*Position*
0	Borkum Riff Lt.-V.	53° 46′ N., 6° 04′ E.	0	Helder	52° 58′ N., 4° 45′ E.
1	Heligoland	54° 11′ N., 7° 54′ E.	1	Hanstholm	57° 05′ N., 8° 35′ E.
2	Elbe Lt.-V. No. 1	54° 01′ N., 8° 13′ E.	2	Krakenes	62° 02′ N., 4° 59′ E.
3	Amrum Bank Lt.-V.	54° 33′ N., 7° 53′ E.	3	Aberdeen	57° 10′ N., 2° 06′ W.

The foreign stations' observations are preceded by the word " Ausland " (Foreign). The Key and Code used is exactly the same as that used for the British " Weather Shipping " Bulletin see page 71.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German, covering the whole sea area off East and North Frisian coasts including Ostfriesland (between Borkum Riff Lt.-V., Elbe entrance and Heligoland) and Nordfriesland (Elbe entrance northward to Ellenbogen, Sylt).

Western, Middle, and Eastern Baltic.

Rügen W/T Station, approximate Latitude 54° 35′ N., Longitude 13° 37′ E.

Call sign—**DAS.**

Wavelength—636 m. I.C.W.

Times of transmission—1030 and 2150 G.M.T.

The message issued at 1030 G.M.T. is based on 0700 G.M.T. observations. The message issued at 2150 G.M.T. is based on 1800 G.M.T. observations.

The messages are preceded by the words " Seewetter Rügen " and consist of two parts.

Part I is a weather report in code giving actual observations at the stations hereunder.

Station No.	*German Station.*	*Position.*	*Station No.*	*Foreign Station.*	*Position.*
4	Bulk	54° 27′ N., 10° 12′ E.	4	Skagen	57° 44′ N., 10° 38′ E.
5	Fehmarnbelt Lt.-V.	54° 36′ N., 11° 09′ E.	5	Copenhagen	55° 42′ N., 12° 37′ E.
6	Aldergrund Lt.-V.	54° 50′ N., 14° 22′ E.	6	Visby	57° 39′ N., 18° 18′ E.
7	Arkona	54° 41′ N., 13° 26′ E.	7	Memel	55° 42′ N., 21° 10′ E.
8	Leba	54° 46′ N., 17° 33′ E.			
9	Brusterort	54° 58′ N., 19° 59′ E.			

The foreign stations' observations are preceded by the word " Ausland " (Foreign).

Key and Code as above.

Part II contains a brief statement of weather conditions followed by a forecast for the following 24 hours in German.

Wireless Gale Warnings.

Gale Warnings are broadcast in German, preceded by the word " Funksturm," giving the nature of the atmospheric distribution with direction and force of wind for the regions specified by the stations indicated below.

W/T Station	Call Sign.	Position. Latitude N.	Position. Longitude E.	Wavelength.	Time of Transmission.	Region.
Norddeich	**DAN**	53°36′	7°09′	600 m. I.C.W. 677 m. I.C.W.	On receipt 0520, 1020* 1630, 2130*	North Sea.
Rügen	**DAS**	54°35′	13°37′	600 m. I.C.W. 636 m. I.C.W.	On receipt 0530, 1030* 1650, 2150*	Baltic Flensburgh to Memel.

* After Weather Bulletin.

IV.—Wireless Ice Warnings.

C.W. and I.C.W.

Norddeich W/T Station, call sign **DAN,** broadcasts, when necessary, except Sundays, information of ice conditions along the German coasts in the North Sea and Baltic in a local code.

The message is transmitted at 0950 G.M.T. on a wavelength of 2400 m. C.W.

Rügen W/T Station, call sign **DAS,** broadcasts ice warnings similar to above at 1030 G.M.T. on a wavelength of 636 m. I.C.W.

SWEDEN.

II.—Weather Shipping Bulletin.

Wireless Telegraphy (C.W.).

North Sea and Baltic.

Karlsborg W/T Station, approximate Latitude 58° 29′ N., Longitude 14° 29′ E.

Call sign—**SAV.**

Wavelength—6000 m. C.W.

Times of transmission—1050 and 2230 G.M.T.

The message issued at 1050 is based on 0700 G.M.T. observations.

The message issued at 2230 is based on 1800 G.M.T. observations.

The messages are preceded by the words " Weather Report " and consist of four parts.

Part I is a weather report in code giving actual observations at the stations hereunder :—

List of Observation Stations.

Index Number.	*Station.*	*Position (approx.) Latitude N.*	*Position (approx.) Longitude E.*
1	Kalmar	56°39′	16°22′
2	Bjurö klubb	64°28′	21°34′
3	Holmögadd	63°35′	20°45′
4	Bremö	62°13′	17°44′
5	Örskär	60°31′	18°22′
6	Sandhamn	59°17′	18°55′
7	Visby	57°39′	18°18′
8	Skanör	55°24′	12°49′
9	Kullen	56°18′	12°27′
0	Vinga	57°38′	11°36′
1	Hammershus	55°19′	14°47′
2	Hanstholm	57°07′	8°36′
3	Utsira	59°18′	4°53′
4	Kråkenes	62°02′	4°59′

The key and code used is exactly the same as that used for the British " Weather Shipping " Bulletin, see page 71.

Part II, en clair (English).

A statement of weather conditions in N. and N.W. Europe and adjacent seas.

Part III, en clair (English).

Weather forecasts for 12 hours for the following areas :—

1 Eastern part of the North Sea (E. of Longitude 5° E.).
2 Sweden, West Coast (Skagerrak, Kattegat and the Sound).
3 Baltic (Southern Baltic; South Skane, Bleking and Öland; Northern Baltic; East Gotaland, Svealand and Gotland).
4 Gulf of Bothnia (Bothnia Sea; Bothnia Bay).

Part IV, en clair (English).

Gale warnings for areas 2, 3 and 4 (above), particulars as follows.

Wireless Gale Warnings.

Baltic.

Karlsborg W/T station broadcasts warnings, *en clair*, English, of gales for the areas given in Part III of the Swedish Weather Shipping Bulletin.

The warnings commence with the words "Gale Warnings" and are valid for the ensuing 24 hours. They form Part IV of the weather bulletins broadcast by **Karlsborg W/T** at 1050 and 2230 G.M.T., previously explained.

IV.—Wireless Ice Warnings.

Swedish Ice Breaker.

Wireless Telegraphy (C.W. and I.C.W.) and Telephony (R/T).

The Swedish Government ice breakers broadcast information in **English** on a wavelength of 600 metres, giving their position, proposed area for ice breaking, and rendering assistance during the ensuing 12 hours. Important local information for mariners will also be broadcast.

The messages are broadcast daily, during the time the vessels are employed on ice-breaking service.

The message will be repeated by wireless telephony on a wavelength of 600 metres R/T, in Swedish and English immediately after the transmission on I.C.W. The repetition will be preceded by the words "Fran svenska statens isbrytarfartyg" (from the Swedish State ice breaking vessel).

Ice breaker "Ymer," call sign **SBPN**, at 0800 and 1045 G.M.T. on weekdays and 1210 G.M.T. on Sundays and holidays.

Ice breaker "Atle," call sign **SBLN,** at 0815 and 1100 G.M.T. on weekdays and 1225 G.M.T. on Sundays and holidays.

NORWAY.

II.—Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.) and Telephony (R/T).

The following stations broadcast gale warnings for the coast of Norway.

Station.	Call Sign.	Position.		Wavelength.	Times of transmission G.M.T.	Region.
		Latitude N.	Longitude E.			
Flekkeroy	**LGY**	58°04′	8°00′	600m. C.W.	1025, 1620, 2120	S. of Kristiansand.
Utsira ...	**LGK**	59°18′	4°55′	600m. I.C.W. 600m. R/T	1000, 1600 2100	Lindesnes to Hellisöy Lt. Ho.
Ålesund ...	**LGA**	62°28′	6°10′	600m. I.C.W.	1150	Sognefjord to Rörvik.
Röst ... (1st Dec. to 30th Apr.)	**LGR**	67°30′	12°05′	600m. R/T	1200 Weekdays	Lofoten, Helgeland, Salten.
Tromsöy ...	**LMT**	69°39′	18°58′	1100m. C.W. 1100m. R/T	1145	Helgeland, Salten and Lofoten.
					1545	Rorvik to boundary Jokobeslv.

DENMARK.

IV.—Wireless Ice Warnings.

Wireless Telegraphy (I.C.W.)

Danish Waterways.

The following W/T stations broadcast a summary of ice conditions in Danish waterways, *en clair* (English). Wavelength 600 metres, I.C.W.

Blaavand W/T station, approximate Latitude 55° 33′ N., Longitude 8° 05′ E., call sign **OXB,** at 0100 and 1300 G.M.T.

Copenhagen W/T station, approximate Latitude 55° 41′ N., Longitude 12° 37′ E., call sign **OXA,** at 1100 and 2300 G.M.T.

LATVIA.

IV.—Wireless Ice Warnings.

Wireless Telephony (R/T).

The broadcasting station at Riga, Latitude 56° 57′ N., Longitude 24° 02′ E., call sign **YLZ,** broadcasts in winter on a wavelength of 238·5 metres R/T, ice reports at 0650, 1035 and 2000 G.M.T. The reports contain information concerning ice and navigation conditions for the Latvian coast. They are broadcast in the Latvian, ENGLISH and German languages.

ESTONIA.

IV.—Wireless Ice Warnings.

Wireless Telegraphy (C.W.)

Tallinn W/T Station, approximate Latitude 58° 56′ N., Longitude 23° 32′ E., call sign **ESA,** broadcasts, on the first appearance of ice, information of ice conditions in Estonian waters in a local code.

The message is transmitted at 0940 G.M.T. on a wavelength of 3508m. C.W.

FINLAND.

II.—Wireless Gale Warnings.

Wireless Telegraphy (I.C.W.) and Telephony (R/T).

The following stations broadcast Gale Warnings when necessary *en clair*, in **English,** at the times and wavelengths given below, the message commencing with the International Safety Signal "TTT Gale Warning."

Station.	Call Sign.	Position.		Wavelength.	Times of Transmission G.M.T.
		Latitude N.	Longitude E.		
Viipuri (Viborg)	**OHP**	60° 43′	28° 45′	600m. I.C.W.	1230 and 2030
Hanko (Hangö)	**OHD**	59° 50′	22° 56′	600m. I.C.W.	1210 and 1755
	OFK	,,	,,	750m. R/T	1205 and 1750
Vaasa	**OHX**	63° 07′	21° 37′	600m. I.C.W. 750m. R/T	1225 and 1800 1220 and 1755

Example of message—"TTT Gale Warning. Southwest gale expected up to about next morning between Aland and Helsinki."

IV.—Wireless Ice Warnings.

Wireless Telegraphy (C.W.)

Helsinki-Helsingfors W/T Station, approximate Latitude 60° 09′ N., Longitude 25° 02′ E., call sign **OHA,** broadcasts, when necessary, information of ice conditions for the coasts of Finland in a local code.

The messages are transmitted at 1030 and 1410 G.M.T. on a wavelength of 3750m. C.W.

FRANCE.

II.—Wireless Gale Warnings.

Wireless Telegraphy.

The following W/T stations broadcast gale warnings concerning the areas "Manche," "Bretagne," "Océan," and "Gascogne":—

Cherbourg-Rouges Terres	Approximate Latitude 49° 37′ N., Longitude 1° 36′ W., call sign **FUC.**
Brest-Mengam ...	Approximate Latitude 48° 21′ N., Longitude 4° 35′ W., call sign **FUE.**
Lorient-Pen-Mané	Approximate Latitude 47° 44′ N., Longitude 3° 21′ W., call sign **FUN.**
Rochefort-Soubise	Approximate Latitude 45° 56′ N., Longitude 0° 59′ W., call sign **FES.**

The following W/T stations broadcast storm warnings concerning the areas "Roussillon," "Provence," "Rhône," and "Corse":—

Toulon-Mourillon	Approximate Latitude 43° 07′ N., Longitude 5° 55′ E., call sign **FUT.**
Ajaccio-Aspretto	Approximate Latitude 41° 56′ N., Longitude 8° 46′ E., call sign **FUI.**

The W/T stations transmit the warning on the 600 metre wavelength as soon as it is received. The International Safety Signal **— — — (TTT)** is first sent out, followed by D.E. and station call sign. This transmission commences towards the end of one of the international three-minute silent periods and the nature of the warning is sent immediately after the end of the silent period. The message is repeated after several minutes.

When the time of sending falls outside a single operator watch on board ship the message is repeated at the commencement of the succeeding watch.

(C.W.)

Eiffel Tower W/T Station, approximate Latitude 48° 51′ N., Longitude 2° 18′ E., call sign **FLE,** broadcasts wireless gale warnings on a wavelength of 7,200 m. C.W.

The warnings are broadcast if the forecasts indicate that the wind force is likely to exceed 7 on the Beaufort scale.

The signals refer to the following French coastal areas:—
Manche, Bretagne, Océan, Gascogne, Roussillon, Rhône, Provence, Corse.

The limits of the areas mentioned above are as follows:—

"Manche" ...	Belgian frontier to and including Carteret.
"Bretagne" ...	From and including Cherbourg to estuary of Loire.
"Océan" ...	From and including Lorient to the Gironde.
"Gascogne" ...	From and including Ile de Ré to Spanish frontier.
"Roussillon" ...	From Spanish frontier to and including Cette.
"Rhône" ...	From and including Cette to Camarat.
"Provence" ...	From and including Camarat to Italian frontier.
"Corse"	All the coasts of Corsica.

Form of Message.

The warnings are sent *en clair* in French, and are valid for 24 hours from the time indicated in the message.

They commence with the name of the day of the week, the time from which the validity of the warning is reckoned, the name of area threatened followed by the word "Tempête" and the probable direction from which the gale may be expected.

Example.

"*Jeudi 15 heures Manche tempête, Nord-Ouest (N.W.).*"

Explanation.

From Tuesday until 1500 to-morrow a gale (Force 7 or over Beaufort) and from a direction between North and West will threaten all parts of the coast between the Belgian frontier and Carteret.

PORTUGAL.

II.—Wireless Weather Bulletins.

Wireless Telegraphy (I.C.W.) and Telephony (R/T.) Containing meteorological conditions at Madeira and Azores.

Monsanto W/T Station, approximate Latitude 38° 44′ N., Longitude 9° 11′ W., call sign **CTV,** broadcasts a meteorological report *en clair*, in Portuguese and English at 1130 and 2300 G.M.T. on a wavelength of 760 metres (I.C.W.) and at 1155 and 2325 G.M.T. on a wavelength of 760 metres (R/T), giving:—

Observations of wind and swell, also a forecast for the next 24 hours of wind and swell for the coast of Portugal. The coast is divided as follows:—

Zona Norte...	From River Minho to Cape Mondego.
Zona Centro	From Cape Mondego to Cape St. Vincent.
Zona Sul ...	Cape of Algarve (southern coast).

The messages are based upon observations of 0700 or 1800 G.M.T.

MOROCCO.

II.—Wireless Gale Warnings.

Wireless Telegraphy (Spark).

Casablanca—Médiounah W/T Station, approximate Latitude 33° 27′ N., Longitude 7° 31′ W., call sign **CNM,** broadcasts gale warnings at 1530 G.M.T. on 600 m. spark. They are broadcast *en clair* in French and repeated at the commencement of the following watch for single operators. The area affected is given in the message.

The message is preceded by the International Safety Signal **(TTT) — — —**

AZORES.

II.—Wireless Weather Bulletin.

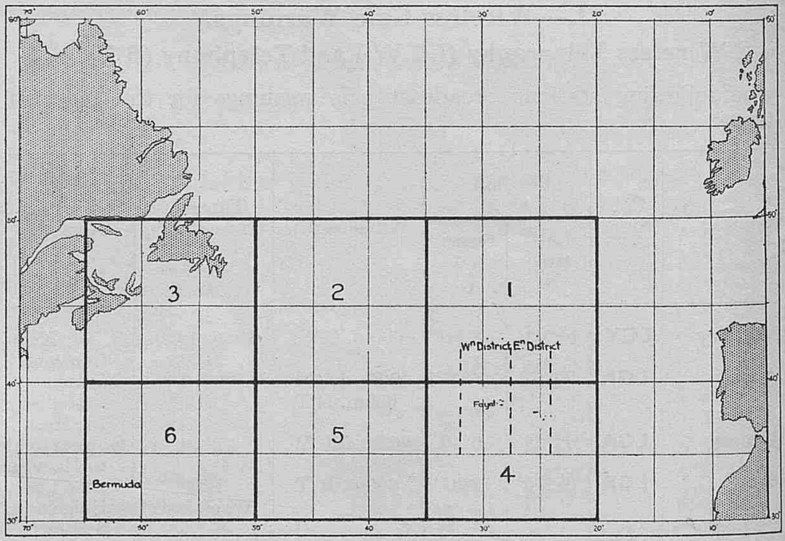
Wireless Telegraphy (C.W. and Spark).

Horta W/T Station, Latitude 38° 32′ N., Longitude 28° 38′ W. (approx.), call signs:—

CTH, Wavelength 770 m. spark. Time of transmission 2000 G.M.T.
CTG, Wavelength 2400 m. C.W. Time of Transmission 2030 G.M.T.

A general statement of weather and a 24 hours' Forecast for the Zones 1 to 6 and the Azores, based on 1300 G.M.T. observations and weather conditions at Bermuda and Fayal, are sent *en clair* in English.

The zones referred to are indicated in the chart below.



PERSONNEL.

The Marine Superintendent will be glad to receive information of distinctions gained and retirements, &c., of Marine Observers.

PROMOTIONS AND AWARDS.

Captain H. E. Higgs has been promoted to the post of Marine Superintendent of the Commonwealth & Dominion Line in succession to Captain W. H. LEA, whose retirement in May, 1936, was noted in this journal last October.

HAROLD EDWARD HIGGS served his apprenticeship in the sailing ships of Messrs. Robert Thomas & Co. of Liverpool, and was in their full rigged ship *Carnarvon Castle* when she was lost by fire in the South Indian Ocean. He was in one of the ship's boats which, after a passage of 24 days, sailed into Fremantle, Western Australia. He afterwards finished his time in the same Company's ship *Dolbadarn Castle.*

Joining the Tyser Line in 1911 he served with them until 1915, when he resigned, and, joining the Royal Naval Reserve, served as Lieutenant, R.N.R., in H.M.S. *Sentinel* from the latter stage of the Dardanelles campaign in 1915 until the occupation of the Black Sea Ports in 1919, thereafter rejoining the Company. Captain HIGGS obtained his first command in the Company in 1926 in S.S. *Port Hacking* and in 1928 came ashore as Assistant Superintendent to Captain LEA, in which post he remained until the latter's retirement.

C. H. W.

Captain R. L. F. Hubbard, R.D., R.N.R., was in January of this year elected to be one of the Elder Brethren of Trinity House.

R. L. F. HUBBARD went to sea in 1902 in the Loch Line of Glasgow, in which Company's sailing ships he served as apprentice, 2nd Mate and Mate, sailing in the barque *Loch Katrine* and the ship *Loch Garry.* He received a commission in the Royal Naval Reserve, and, after a year's training in the Navy during which he was awarded the Royal Humane Society's Medal, he joined the Orient Line as 5th Officer in 1911.

Promoted through the various ranks, he was made Chief Officer in 1922, and received his first command in the Company in the *Osterly* in 1929. He later commanded the *Orsova*, *Oronsay*, *Orontes* and again the *Orsova*, which latter he was in until she was sold for breaking up in October, 1936.

During the Great War Captain HUBBARD served in the Royal Navy, first in the operations against the German cruiser *Königsberg* on the East African coast, and for the remainder of the War in destroyers in home waters.

C. H. W.

RETIREMENTS.

Captain C. E. Stuart, R.D., R.N.R., Commander of the R.M.S. *Stirling Castle* and Commodore of the Union Castle Fleet has retired from the sea.

Captain STUART commenced his sea career in the employ of Shaw, Saville and Company, serving in their S.S. *Arawa* and Ships *Dunedin* and *Blenheim.*

After a short time in J. T. Rennie & Co.'s S.S. *Ifafa*, he returned to Shaw Saville, serving from 5th to 2nd Officer in their S.S. *Blenheim* and *Arawa.*

In 1895 he joined the Union Castle Line as 4th Officer and in 1914 was serving as Chief Officer when called out for active service in the Royal Navy. On his return to the Company in 1919 he was appointed Master of the S.S. *Huntscraft* and has since commanded the *Huntsend, Comrie Castle, Clury Castle, Gascow, Braemar Castle, Gloucester Castle, Cawdor Castle, Walmer Castle, Glengorm Castle, Grantully Castle, Kinfauns Castle, Llanstephan Castle, Armadale Castle, Llandovery Castle, Saxon, Balmoral Castle, Arundel Castle, Carnarvon Castle* and *Stirling Castle.*

In 1928, when commanding *Llanstephan Castle*, the Board of Trade expressed their special appreciation of his seamanship which resulted in the prompt rescue of a stowaway who had jumped overboard.

J. H.

OBITUARY.

WITH deep regret we record the following :—

Captain Thomas Sanderson Angus, formerly Nautical Inspector of the Peninsular and Oriental Steamship Co., died at his home at Loughton, Essex, on 5th March, 1937.

Captain ANGUS commenced his sea career in 1866 and served his apprenticeship in the ships *Wild Deer* and *Peter Denny* owned by P. Henderson & Co., of Glasgow. After serving for some time as an officer in sail he joined the P. & O. Company in 1875 as a Fifth Officer.

In 1886, when Chief Officer of the *Clyde*, he had the misfortune to lose his right hand as the result of an injury sustained when working anchors. In 1889 he was promoted to command the *Canton* and was later employed ashore superintending the building of P. & O. ships. He subsequently commanded the *Ballarat*, *Britannia*, *China* and *Macedonia.* In 1904 he was appointed Nautical Inspector, which post he held until his retirement from active service in 1922 after 47 years' service in the Company.

J. H.

Captain Thomas Golding, C.B.E., an Elder Brother of Trinity House, died at Felixstowe on 29th January, 1937.

On leaving H.M.S. *Worcester*, Captain GOLDING served for some years in sail before joining the Mogul Steamship Company in 1880.

Promoted to command in 1888, he was employed on the Far Eastern and Australian services of the Company until his election as an Elder Brother in 1905.

He was a member of the Board of Trade Committee on Colour Blindness in 1910 and was the Trinity House representative on the council of the London Chamber of Commerce from 1912 to 1926. He also served on the Southampton Harbour Board from 1915 to 1927 and on the Port of London Authority from 1927 to 1930, in which year he retired from active duties as an Elder Brother.

J. H.

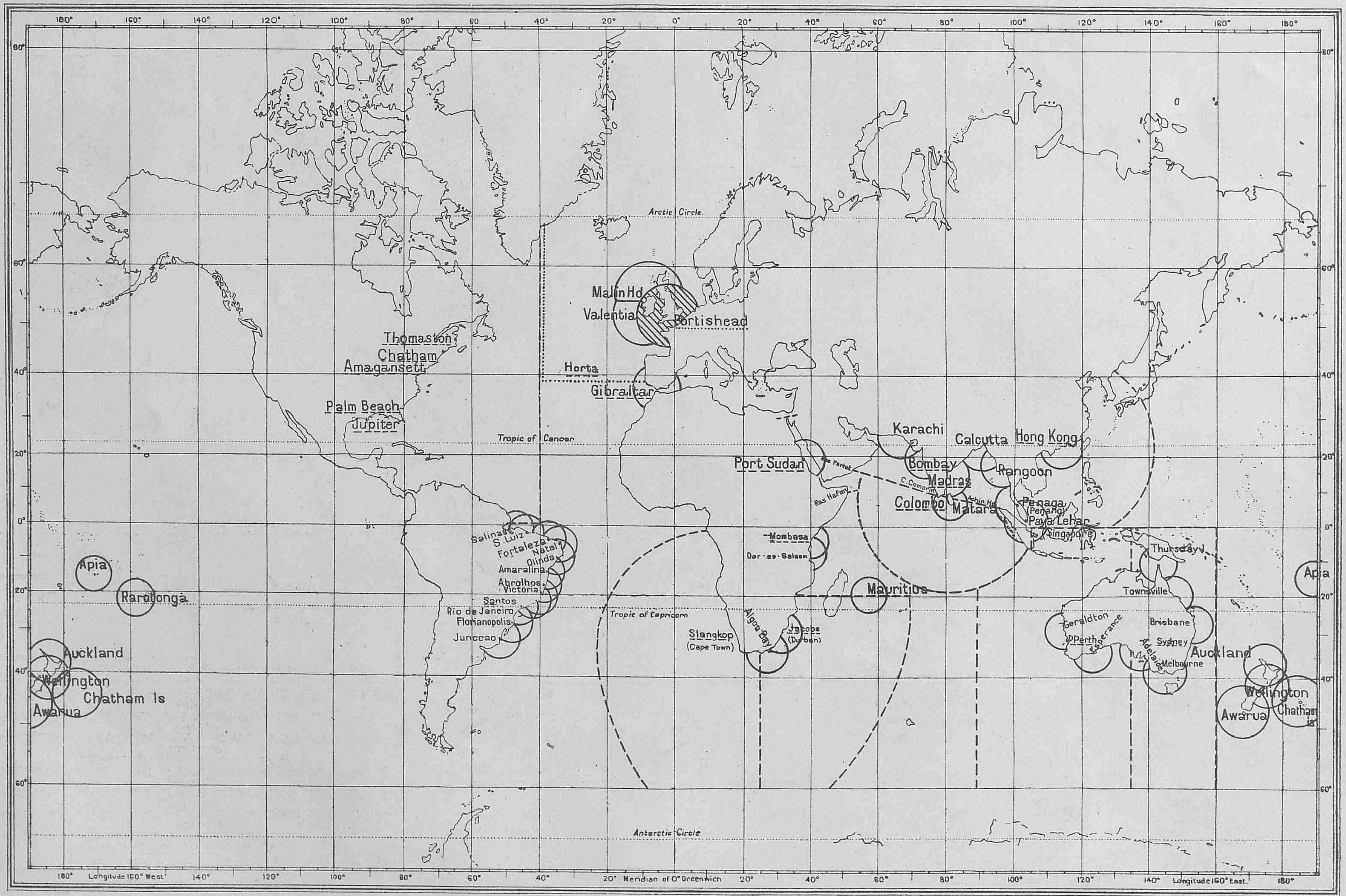
Captain Harold B. Pope, O.B.E., Professional Officer of the Mercantile Marine Department of the Board of Trade, died at Shortlands, Kent, on 18th January, 1937.

After serving his apprenticeship in sail and obtaining experience in different classes of steamships, he joined the Atlantic Transport Line in which he rose to command before joining the Board of Trade in 1910 as a Nautical Surveyor.

Captain POPE was at first posted to Liverpool but was transferred to London twelve months later and in 1925 had risen to Principal Officer of the port. In 1931 he was appointed Professional Officer in succession to the late Captain S. W. BATE and received the O.B.E. in the same year.

J. H.

SHIPS' WIRELESS WEATHER SIGNALS.
CHART OF THE WORLD.
Stations for Reception of Routine Wireless Weather Reports from "Selected Ships".


Arctic Circle
Tropic of Cancer
Tropic of Capricorn
Antarctic Circle
Longitude 160° West
Meridian of 0° Greenwich
Longitude 160° East
Malin Hd
Valentia
Portishead
Thomaston
Chatham
Amagansett
Horta
Gibraltar
Palm Beach
Jupiter
Karachi
Calcutta
Hong Kong
Port Sudan
Perim
Bombay
Rangoon
C. Comorin
Madras
Ras Hafun
Colombo
Achin Hd
Matara
Penaga
(Penang)
Paya Lebar
(Singapore)
Mombasa
Dar-es-Salaam
Mauritius
Selinas
S. Luiz
Fortaleza
Natal
Olinda
Amaralina
Abrolhos
Victoria
Santos
Rio de Janeiro
Florianopolis
Junccao
Apia
Rarotonga
Auckland
Wellington
Chatham Is
Awarua
Slangkop
(Cape Town)
Algoa Bay
Jacobs
(Durban)
Thursday I.
Townsville
Geraldton
Perth
Esperance
Brisbane
Sydney
Adelaide
Melbourne
Chatham Is
180°
160°
140°
120°
100°
80°
60°
40°
20°
0°

…… The dotted line indicates the area in which British "A Selected Ships" report under control to Portishead

– – – – A pecked line indicates the reporting area round stations in other countries to which British "A Selected Ships" should report. The names of such stations being underlined with a pecked line

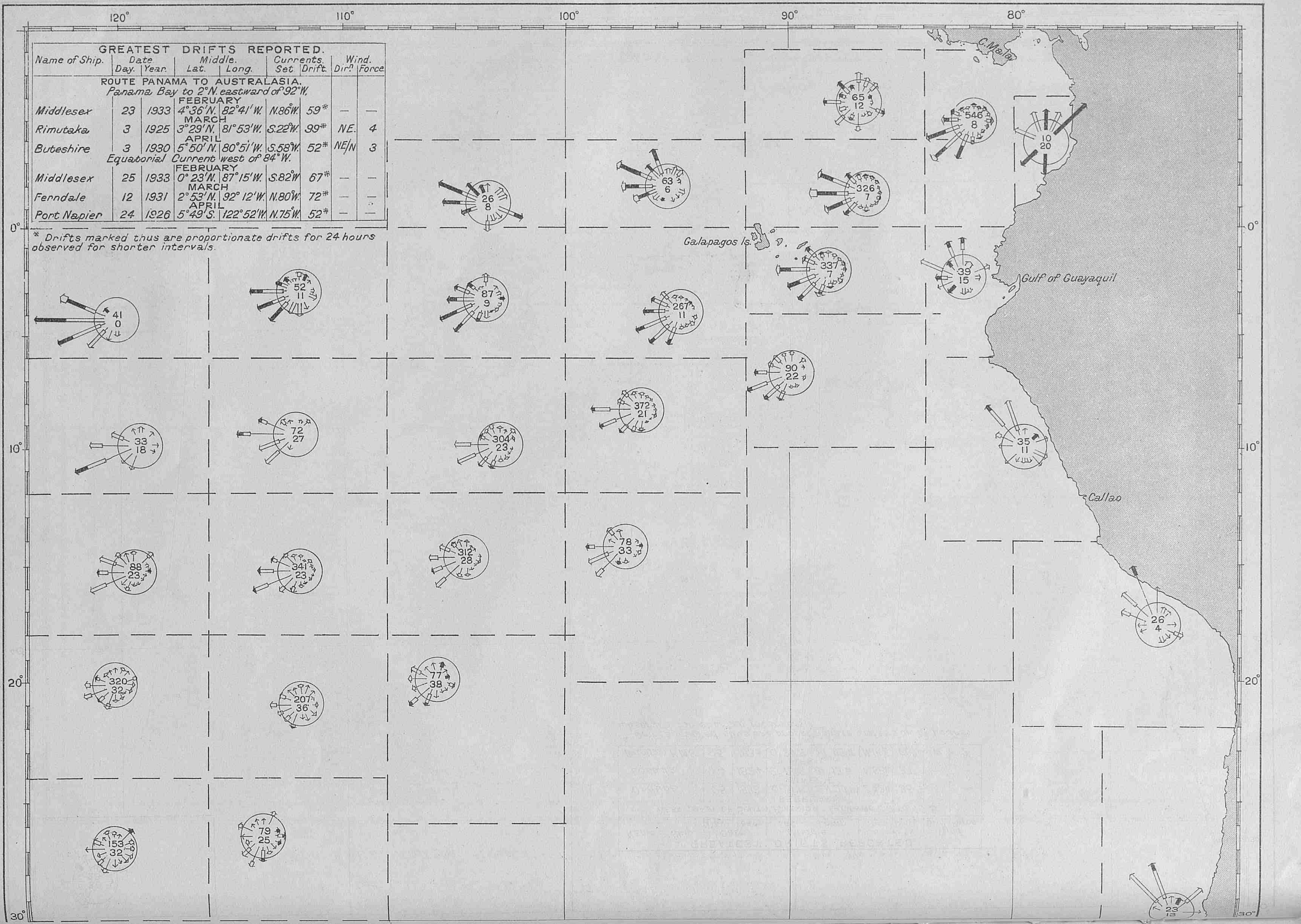
▨ The small shaded areas round stations detailed to receive reports from "A Selected Ships" indicate where these ships should not report on account of congestion.

○ The full circles indicate the areas round islands and coast stations which are detailed to intercept "B Selected Ships" reports made to CQ on 600 metres

CURRENTS IN THE EASTERN PORTION OF THE SOUTH PACIFIC.

FEBRUARY MARCH and APRIL.

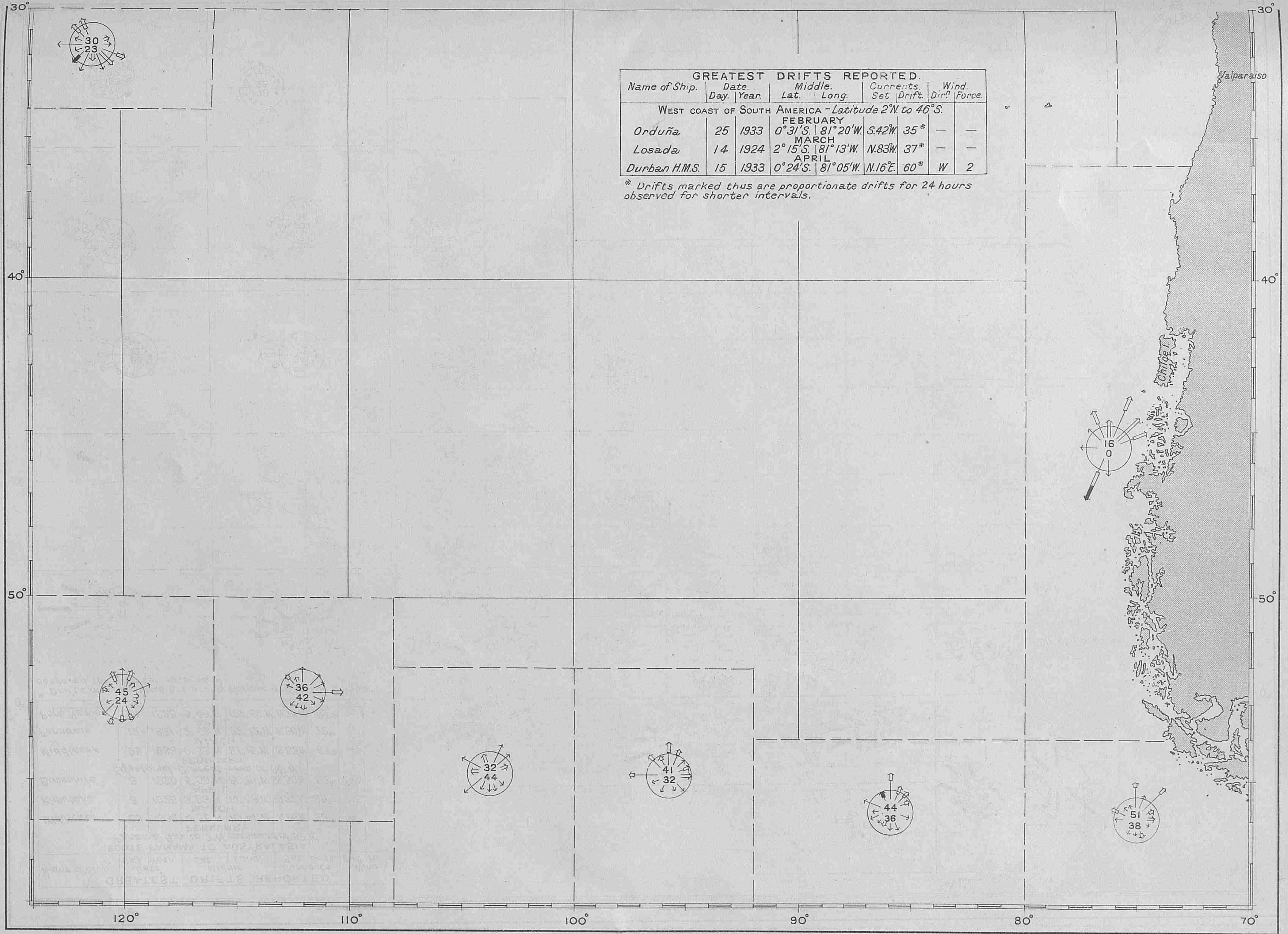
Observations of ships regularly observing for the British Meteorological Office, 1910-1936.


120°
110°
100°
90°
80°
0°
10°
20°
30°
C. Mala
Gulf of Guayaquil
Callao
Galapagos Is.
65
12
546
8
10
20
26
8
63
6
326
7
337
7
39
15
41
0
52
11
87
9
267
11
90
22
372
21
33
18
72
27
304
23
35
11
78
33
88
23
341
23
312
28
26
4
320
32
207
36
77
38
153
32
79
25
23
13

GREATEST DRIFTS REPORTED.

Name of Ship.	Date Day.	Date Year.	Middle Lat.	Middle Long.	Currents. Set	Currents. Drift.	Wind. Dir.n	Wind. Force
ROUTE PANAMA TO AUSTRALASIA. *Panama Bay to 2°N. eastward of 92°W.*								
			FEBRUARY					
Middlesex	23	1933	4°36'N.	82°41'W.	N.86°W.	59*	—	—
			MARCH					
Rimutaka	3	1925	3°29'N.	81°53'W.	S.22°W.	99*	NE.	4
			APRIL					
Buteshire	3	1930	5°50'N.	80°51'W.	S.58°W.	52*	NE/N	3
Equatorial Current west of 84°W.								
			FEBRUARY					
Middlesex	25	1933	0°23'N.	87°15'W.	S.82°W.	67*	—	—
			MARCH					
Ferndale	12	1931	2°53'N.	92°12'W.	N.80°W.	72*	—	—
			APRIL					
Port Napier	24	1926	5°49'S.	122°52'W.	N.75°W.	52*	—	—

* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.



Name of Ship.	Date.		Middle.		Currents.		Wind.	
	Day.	Year.	Lat.	Long.	Set	Drift.	Dirn.	Force.
WEST COAST OF SOUTH AMERICA - *Latitude 2°N. to 46°S.*								
			FEBRUARY					
Orduña	25	1933	0°31'S.	81°20'W.	S.42°W.	35*	—	—
			MARCH					
Losada	14	1924	2°15'S.	81°13'W.	N.83°W.	37*	—	—
			APRIL					
Durban H.M.S.	15	1933	0°24'S.	81°05'W.	N.16°E.	60*	W	2

* Drifts marked thus are proportionate drifts for 24 hours observed for shorter intervals.

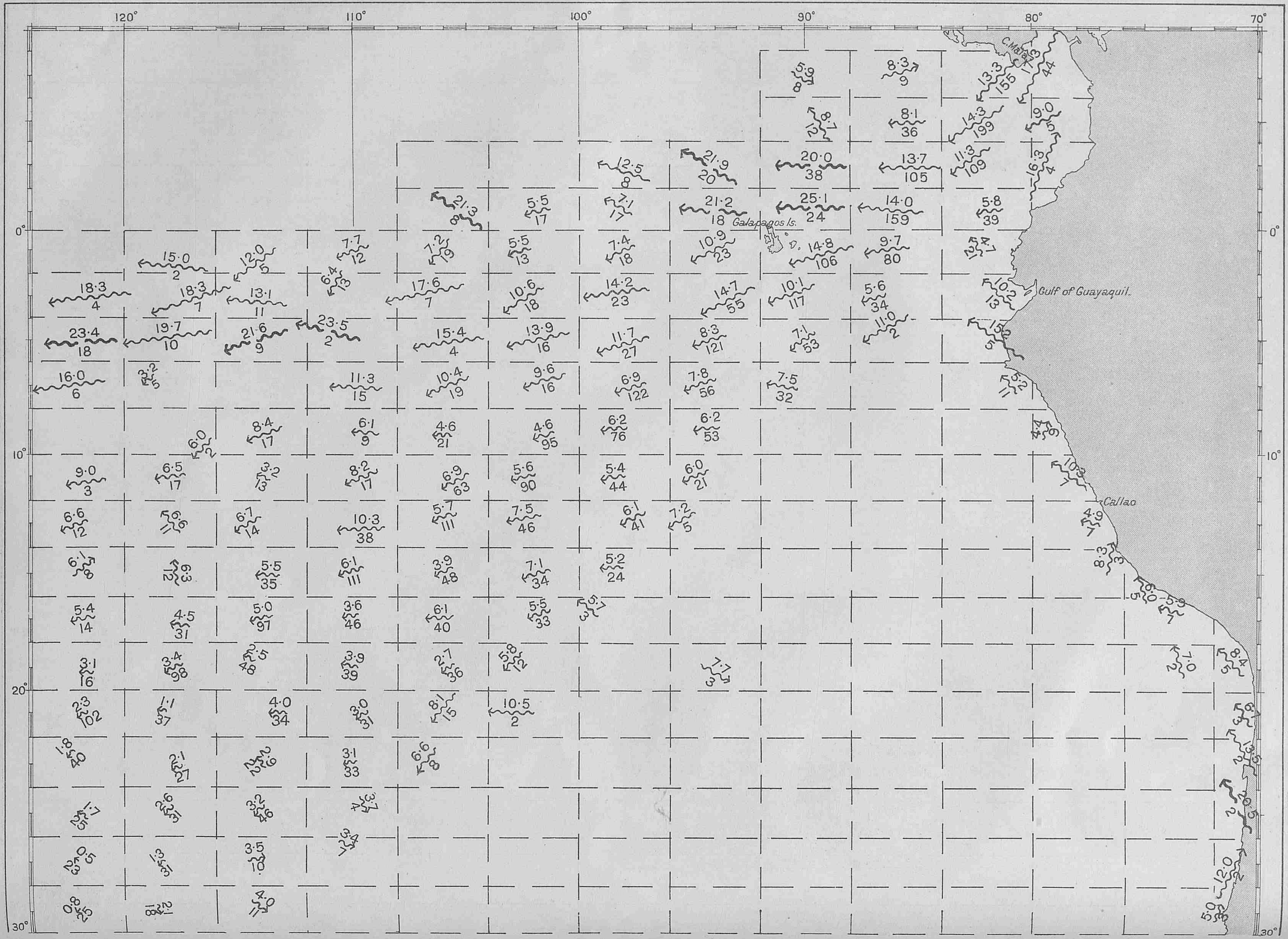
EXPLANATION OF CURRENT ROSES.

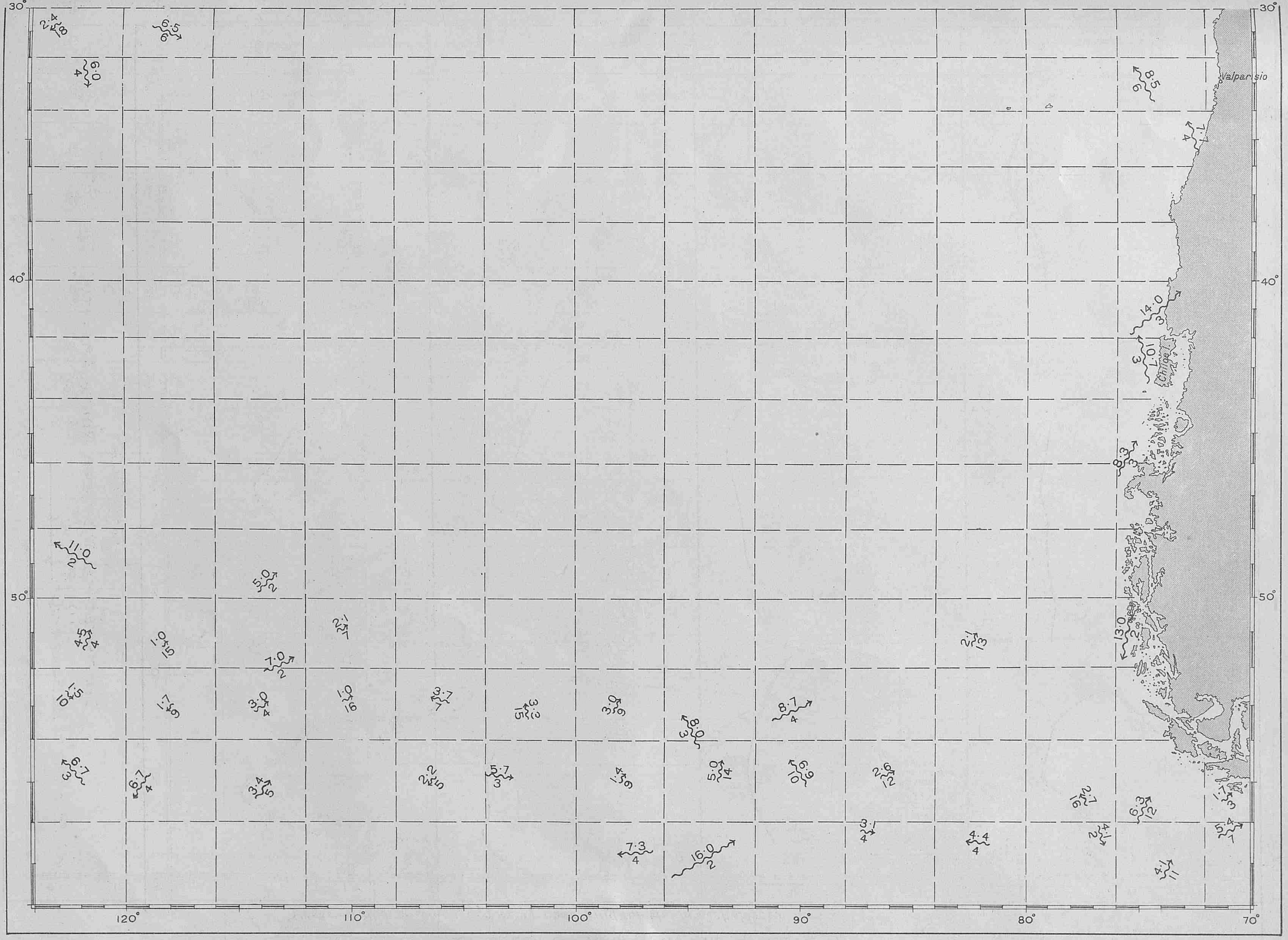
The current roses are drawn from observations within the pecked lines. Arrows flow with the current, length represents frequency, thickness strength;— 6-12 miles per day, ⟶, 13-24 miles per day ⇒, 25-48 " " ", ➡, 49-72 " " " ⇒,
Distance from tail of arrow to circle represents 5%. Scale 0 10 20 30 40 50%.
The upper figure in centre of rose gives total number of observations, the lower figure the percentage frequency of currents less than 6 miles per day. 73 miles per day and above ➡.

CURRENTS IN THE EASTERN PORTION OF THE SOUTH PACIFIC

FEBRUARY MARCH and APRIL

Observations of ships regularly observing for the British Meteorological Office, 1910-1936.


120°
110°
100°
90°
80°
70°
0°
10°
20°
30°
C. Mala
Galapagos Is.
Gulf of Guayaquil
Callao


30°
40°
50°
120°
110°
100°
90°
80°
70°
Valparaiso
Chiloe I.
2·4 18
6·5 6
6·0 4
8·5 6
7·7 4
14·0 3
10·7 3
8·3 3
11·0 2
5·0 2
13·0 2
4·5 4
1·0 15
2·1 1
7·0 2
2·1 13
1·5 10
1·7 9
3·0 4
1·0 16
3·7 7
3·2 15
3·0 9
8·0 3
8·7 4
6·7 3
6·7 4
3·4 5
2·2 5
5·7 3
1·4 9
5·0 14
6·9 10
2·6 12
2·7 16
6·3 12
1·7 3
3·1 4
4·4 4
4·1 2
5·4 1
7·3 4
16·0 2
4·1 11

EXPLANATION OF CURRENT ARROWS.

The arrows flow with the current and represent the resultant of currents observed within the pecked lines. The centre of each arrow lies in the mean position of observation. The figures above the arrows give the velocity of current in miles per day; the figures below the arrows the number of observations. In cases where the arrows drawn to scale are inconveniently long the symbol ⇝ is substituted

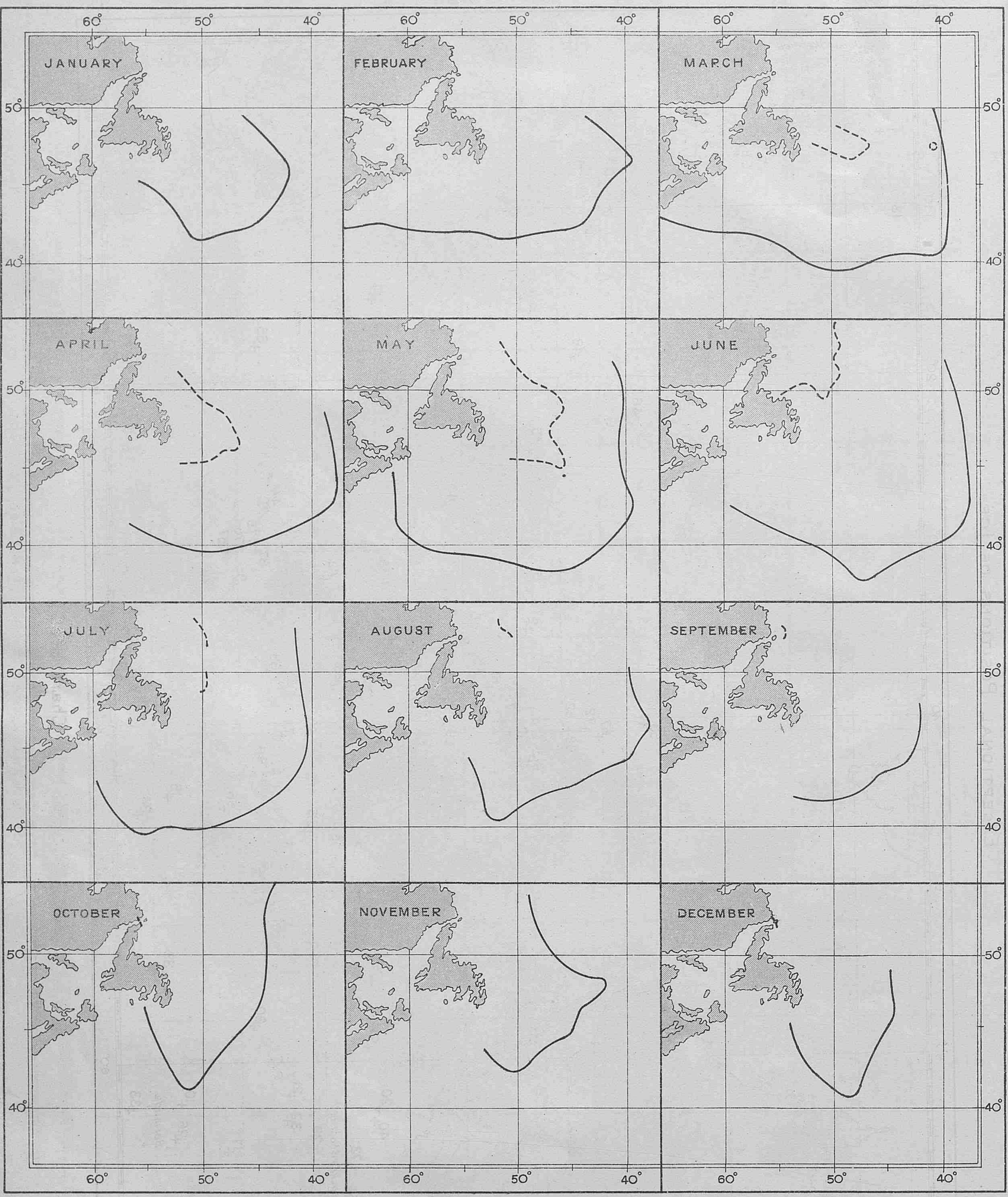

JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
60°
50°
40°
50°
40°

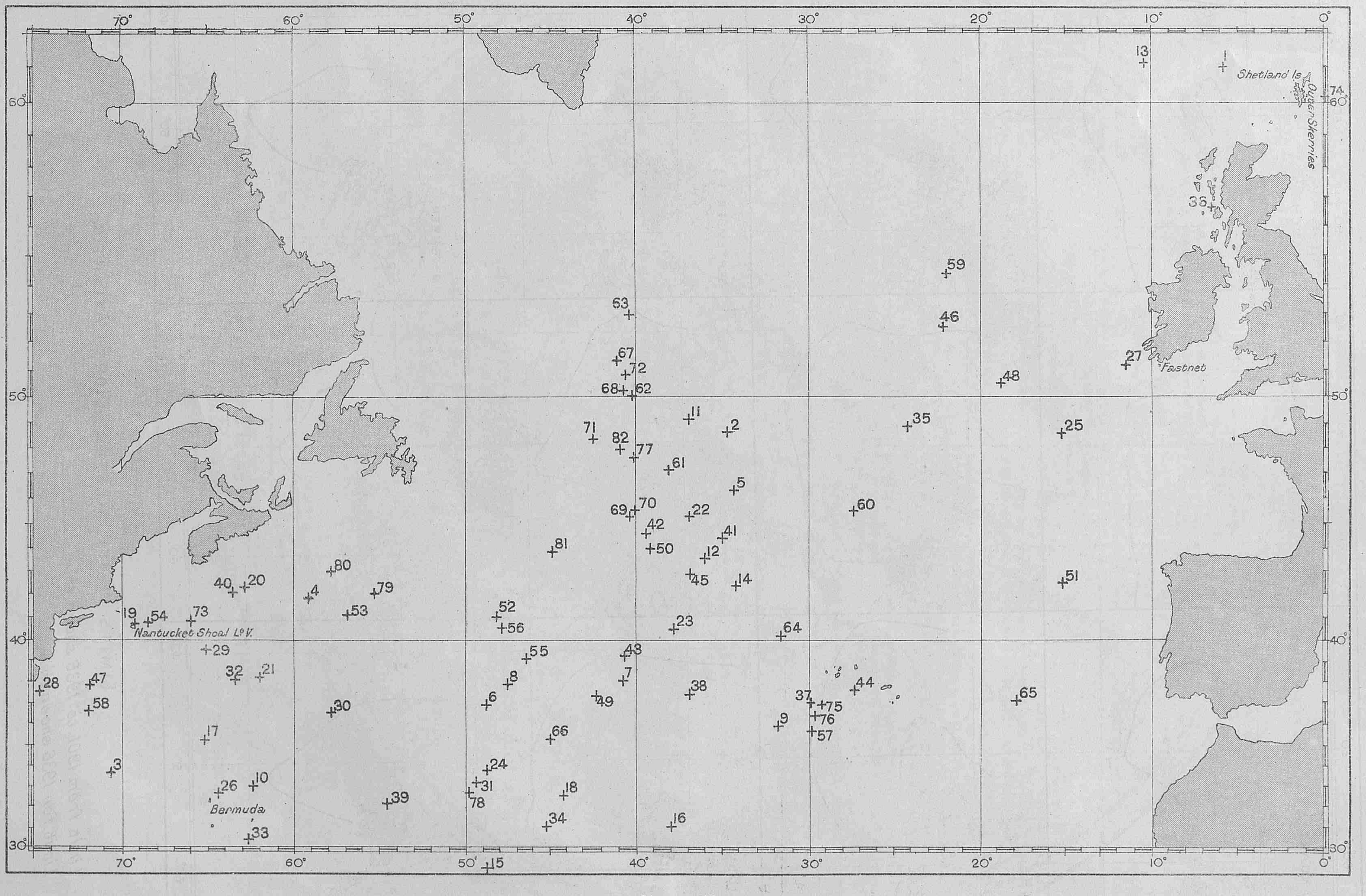
CHART A

LIMITS OF ICE, WESTERN NORTH ATLANTIC.

Limit from 1901 to 1936 shown thus ——————

Limit for 1936 shown thus – – – – – – – – –

EXCEPTIONAL POSITIONS OF ICE.


70°
60°
50°
40°
30°
20°
10°
0°
Shetland Is.
Outer Skerries
Fastnet
Nantucket Shoal Lt V.
Bermuda
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9
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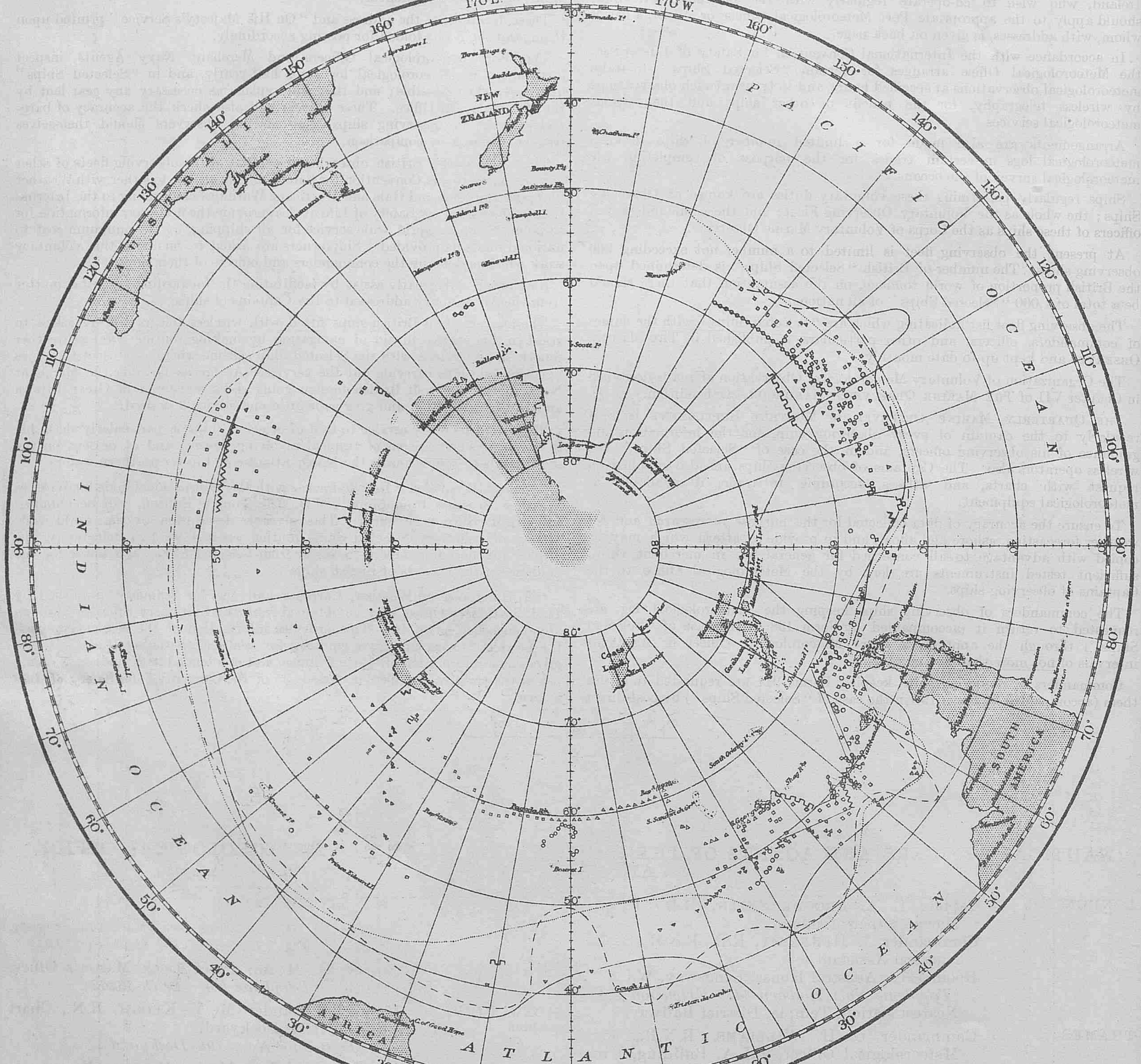
81
82

Chart B.



180°
170°E.
170°W.
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°E.
10°W.
0°
AUSTRALIA
NEW ZEALAND
Tasmania
Three Kings Is.
Chatham I.
Bounty Is.
Antipodes Is.
Snares
Auckland Is.
Campbell I.
Macquarie I.
Emerald I.
Scott I.
Balleny Is.
Victoria Land
Ross Barrier
PACIFIC OCEAN
INDIAN OCEAN
ATLANTIC OCEAN
SOUTH AMERICA
AFRICA
C. of Good Hope
Gough I.
Tristan da Cunha
Bouvet I.
S. Georgia
Shag Rk.
S. Sandwich Is.
South Orkney Is.
Graham Land
Coats Land
Kerguelen I.
Heard I.
Crozet I.
Prince Edward I.

ICE CHART OF THE SOUTHERN HEMISPHERE,

APRIL MAY and JUNE.

EXPLANATION.

The symbols used to distinguish the ice of each of the three months are as follows:–

	Bergs, 1902-1936.	*Position of northernmost pack ice actually observed 1885-1936.*	*Extreme limit of all ice, 1772-1936.*
April	△	∿∿∿∿∿∿	————
May	□	⊓⊓⊓⊓⊓⊓	— — — —
June	○	—o—o—o—o—	··········

Note — The symbols for pack ice are joined by hair line where desirable.

The coast line of the Antarctic continent as shown on this chart is not completely corrected to accord with the latest survey information. It is intended in a later volume of The Marine Observer, after the Admiralty Ice chart of the Southern Hemisphere No 1241 has been revised, to again publish this chart in The Marine Observer with coast lines as complete as possible and to bring the ice information up to date annually.

MARINE METEOROLOGY.

Co-operation of Shipowners, Masters and Mates.

Captains and Officers of ships registered in Great Britain and Northern Ireland, who wish to co-operate regularly with the Meteorological Office should apply to the appropriate Port Meteorological Officer or Agent, a list of whom, with addresses, is given on back page.

In accordance with the International Convention for Safety of Life at Sea, the Meteorological Office arranges for certain "Selected Ships" to take meteorological observations at specified hours, and to transmit such observations by wireless telegraphy, for the benefit of other ships and the various meteorological services.

Arrangements are also made for a limited number of ships to keep meteorological logs in certain trades for the purpose of completing the meteorological survey of the oceans.

Ships regularly performing these voluntary duties are known as Observing Ships; the whole as the Voluntary Observing Fleet; and the commanders and officers of these ships as the Corps of Voluntary Marine Observers.

At present the observing fleet is limited to a number not exceeding 360 observing ships. The number of British "Selected Ships" is determined upon the British proportion of world tonnage, on the assumption that there should be a total of 1,000 "Selected Ships" of all nations.

The observing fleet list indicating which are "Selected Ships," with the names of commanders, officers, and other particulars, is published in THE MARINE OBSERVER and kept up to date monthly.

The Organization of Voluntary Meteorological Observation at sea is described in Chapter VII of THE MARINE OBSERVER'S HANDBOOK, sixth edition.

THE QUARTERLY MARINE OBSERVER or MONTHLY SUPPLEMENT is sent regularly to the captain of every observing ship, for the information and guidance of his observing officers, and in the case of "Selected Ships," the wireless operators also. The Captains of observing ships are also supplied on request with charts, and atlases, according to trade, if available, as meteorological equipment.

To ensure the accuracy of data collected for the purpose of research and for weather forecasting, ashore and afloat, and to provide a pattern which may be copied with advantage to all concerned for general use in merchant ships, sufficient tested instruments are lent by the Meteorological Office to the Captains of observing ships.

The commanders of observing ships keeping the meteorological log are requested to return it (accompanied by Form 138 in the case of "Selected Ships") through the appropriate Port Meteorological Officer or Agent at intervals of not more than five months.

Commanders of observing ships keeping Forms 911 are requested to return them (accompanied by Form 138 in the case of "Selected Ships") by post direct to the Meteorological Office, London, at the end of each voyage, or at intervals of not more than two months.

These forms have the address and "On His Majesty's Service" printed upon them, and should be folded for posting accordingly.

The Port Meteorological Officers and Merchant Navy Agents inspect instruments in Meteorological log ships half-yearly, and in "Selected Ships" quarterly, when possible; and they will replace as necessary any gear lent by the Meteorological Office. These officers will also check the accuracy of barometers, etc., in observing ships, but marine observers should themselves frequently check by comparison.

The work of the British observing fleet, that of the observing fleets of other nations party to the Convention for Safety of Life at Sea, together with Weather Shipping Bulletins and Gale and Hurricane Warnings conforming to the International Convention for Safety of Life at Sea, provide the necessary information for shipping. Thus a world wide service for all shipping, at the minimum cost to national funds, is provided. Shipowners are asked to facilitate this voluntary work which is done by the commanders and officers of their ships.

Shipowners will greatly assist by facilitating the forwarding of postal matter from the Air Ministry addressed to the Captains of ships.

The masters of all British ships fitted with wireless telegraphy are asked to assist in this service in aid of navigation by making routine wireless weather reports in accordance with the Selected Ship scheme where and when there are not Selected Ships carrying out the service. As far as possible the Merchant Navy Agents will visit British foreign going ships registered in Great Britain and Northern Ireland, and give assistance and advice if desired.

This supplementary service to that of Selected Ships is particularly desirable in the regions and seasons of tropical revolving storms, and at present on the more northern routes across the North Atlantic and in far northern waters.

A pamphlet entitled "Decode for use with the International Code for Wireless Weather Messages from Ships", M.O. 329, Fourth Edition, can be obtained from H.M. Stationery Office. This gives a description of the world wide system of voluntary Selected Ships routine wireless weather telegraphy, the Tables for decoding reports received from Selected Ships, and notes for the guidance of the masters of British ships.

"A Handbook of Weather, Currents and Ice for Seamen" published by H.M. Stationery Office, may be obtained from the Stationery Office or through any bookseller, price 4s. This provides information of the elements named, the Laws of Storms, and gives guidance for weather forecasting at sea. It also gives some information of Ocean Pilotage and is intended as a guide for making use of the services specified in Article 35 of the Convention for Safety of Life at Sea.

NAUTICAL OFFICERS AND AGENTS OF THE MARINE DIVISION OF THE METEOROLOGICAL OFFICE. AIR MINISTRY.

LONDON ... ... Captain L. A. BROOKE SMITH, R.D., R.N.R., Marine Superintendent.
Commander J. HENNESSY, R.D., R.N.R., Senior Nautical Assistant.
Room 117A, Adastral House, Kingsway, W.C.2.
(*Telephone No.: Holborn 3434 Extension 421*).
Nearest station, Temple, District Railway.

THAMES ... ... Commander C. H. WILLIAMS, R.N.R., Port Meteorological Officer, P.L.A. Building, King George V Dock (south side), London, E.16. (*Telephone No.: Albert Dock 2659. Telegraphic Address: Barometric Aldock, London*).

MERSEY ... ... Commander M. CRESSWELL, R.N.R., Port Meteorological Officer, Dock Office, Liverpool. (*Telephone No.: Bank 8959. Telegraphic Address: Meteorite, Liverpool*).

Agents.

BRISTOL CHANNEL Captain EDWARD HALL, 21, Dowlais Buildings, West Bute Street, Cardiff. (*Telephone No.: Cardiff 1268*).

Agents (*contd.*).

CLYDE ... ... Captain W. HENDERSON, 80, Buchanan Street, Glasgow, C.1. (*Telephone No. Central 3775*).

FORTH ... ... Captain G. MORE, Chief Dock Master's Office. Leith. (*Telephone No.: Leith 36262*).

HONG KONG, China. Lieut. Commander M. V. KEOGH, R.N., Chart Depot, H.M. Dockyard.
(*Telephone No.: 108 Dockyard*).

HUMBER ... ... W. H. CARR, Esq., Master Mariner, Ferensway Chambers, Ferensway, Hull. (*Telephone No.: Hull 16063.*)

SOUTHAMPTON Captain Sir BENJAMIN CHAVE, K.B.E. Room 35 Royal Mail House.

SYDNEY, New South Wales. Captain N. G. ROSKRUGE.
Captain G. B. MERCER.
Customs House. (*Telephone No.: B6421*).

TYNE ... ... Captain F. B. WEST, Customs House Chambers, Quayside, Newcastle upon Tyne, 1. (*Telephone No.: Newcastle 23203*).

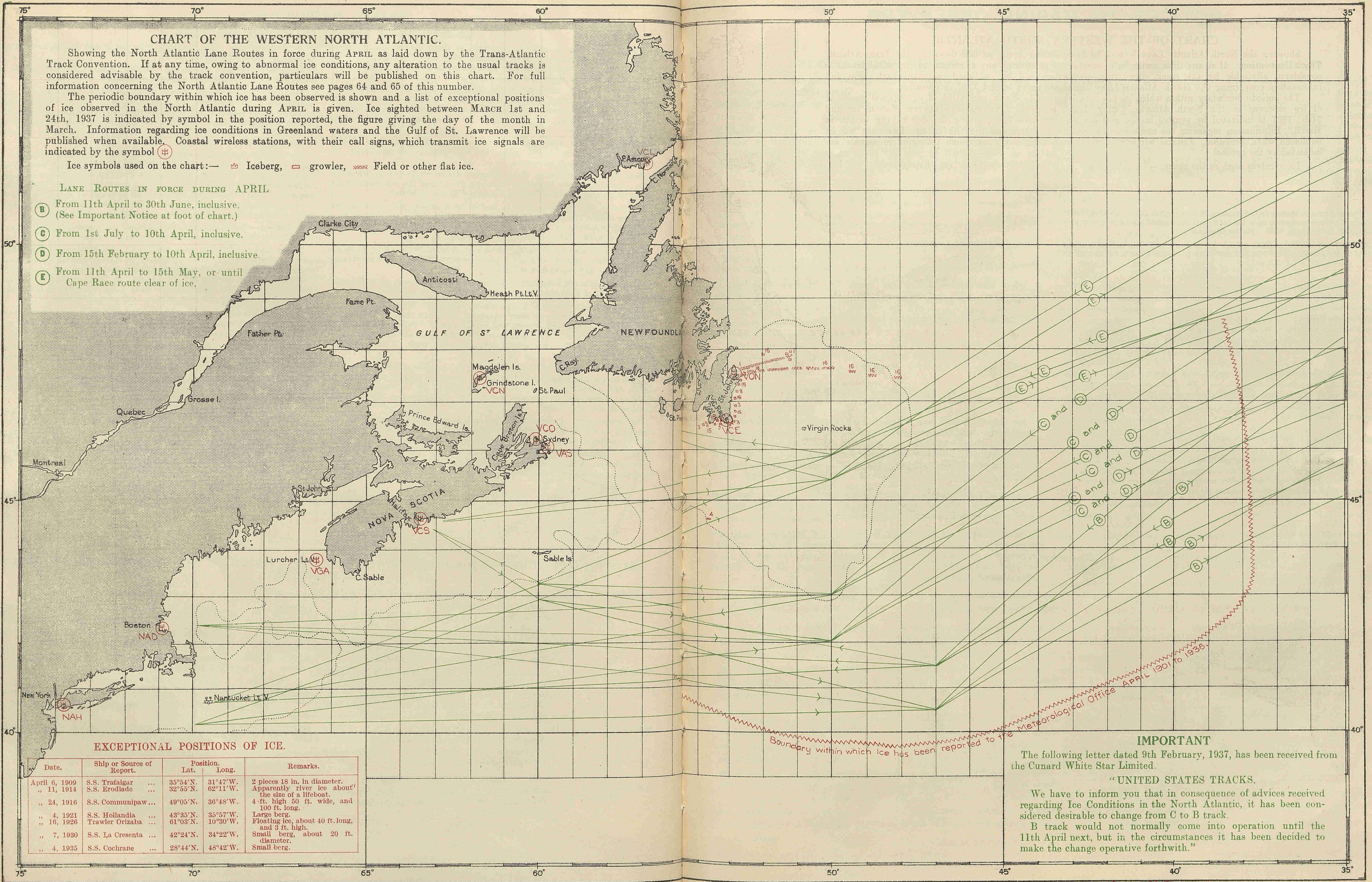

75°
70°
65°
60°
50°
45°
40°
35°
Clarke City
Anticosti
Heath Pt. Lt. V.
Fame Pt.
Father Pt.
GULF OF ST LAWRENCE
NEWFOUNDLA
C. Ray
P. Amour
VCI
C. Norman
Magdalen Is.
Grindstone I.
VCN
St. Paul
Grosse I.
Quebec
Montreal
Prince Edward Is.
Cape Breton Isl.
VCO
Sydney
VAS
St. John
NOVA SCOTIA
Halifax
VCS
Lurcher Lt. V.
VGA
C. Sable
Sable Is.
Boston
NAD
New York
NAH
Nantucket Lt. V.
St. Johns
VON
C. Race
VCE
St. Pierre
Virgin Rocks
E
C and D
B
Boundary within which ice has been reported to the Meteorological Office APRIL 1901 to 1936.

CHART OF THE WESTERN NORTH ATLANTIC.

Showing the North Atlantic Lane Routes in force during APRIL as laid down by the Trans-Atlantic Track Convention. If at any time, owing to abnormal ice conditions, any alteration to the usual tracks is considered advisable by the track convention, particulars will be published on this chart. For full information concerning the North Atlantic Lane Routes see pages 64 and 65 of this number.

The periodic boundary within which ice has been observed is shown and a list of exceptional positions of ice observed in the North Atlantic during APRIL is given. Ice sighted between MARCH 1st and 24th, 1937 is indicated by symbol in the position reported, the figure giving the day of the month in March. Information regarding ice conditions in Greenland waters and the Gulf of St. Lawrence will be published when available. Coastal wireless stations, with their call signs, which transmit ice signals are indicated by the symbol ⊕

Ice symbols used on the chart:— ♔ Iceberg, ▭ growler, ﹏ Field or other flat ice.

LANE ROUTES IN FORCE DURING APRIL

- Ⓑ From 11th April to 30th June, inclusive. (See Important Notice at foot of chart.)
- Ⓒ From 1st July to 10th April, inclusive.
- Ⓓ From 15th February to 10th April, inclusive.
- Ⓔ From 11th April to 15th May, or until Cape Race route clear of ice.

EXCEPTIONAL POSITIONS OF ICE.

Date.	Ship or Source of Report.	Position. Lat.	Position. Long.	Remarks.
April 6, 1909	S.S. Trafalgar ...	35°54′N.	31°47′W.	2 pieces 18 in. in diameter.
,, 11, 1914	S.S. Erodiade ...	32°55′N.	62°11′W.	Apparently river ice about the size of a lifeboat.
,, 24, 1916	S.S. Communipaw ...	49°05′N.	36°48′W.	4 ft. high 50 ft. wide, and 100 ft. long.
,, 4, 1921	S.S. Hollandia ...	43°35′N.	35°57′W.	Large berg.
,, 16, 1926	Trawler Orizaba ...	61°03′N.	10°30′W.	Floating ice, about 40 ft. long, and 3 ft. high.
,, 7, 1930	S.S. La Cresenta ...	42°24′N.	34°22′W.	Small berg, about 20 ft. diameter.
,, 4, 1935	S.S. Cochrane ...	28°44′N.	48°42′W.	Small berg.

IMPORTANT

The following letter dated 9th February, 1937, has been received from the Cunard White Star Limited.

"UNITED STATES TRACKS.

We have to inform you that in consequence of advices received regarding Ice Conditions in the North Atlantic, it has been considered desirable to change from C to B track.

B track would not normally come into operation until the 11th April next, but in the circumstances it has been decided to make the change operative forthwith."

H.M. Stationery Office Press, Kingsway. W.C.2

Ps.579/3247. Wt.18.A. D.22. Gp.908. 925. 3/37.

NOTICES TO MARINE OBSERVERS.

The Observation of Wind Force at Sea.

With reference to the article under this heading published in the April, 1936 MARINE OBSERVER, page 54, Volume XIII, No. 122, and the notices in that number and the February, 1937 Supplement, the Captains of observing ships are requested to please have these tests of the scale proposed by Germany, of visible effects of wind-force on the sea, completed as soon as possible.

Further supplies of forms, copy of which is given below, may be obtained from the Port Meteorological Officers and Merchant Navy Agents. All observations for this test should be returned by June 30th, 1937, at latest.

Please return to Marine Superintendent, Meteorological Office, London, together with the Captain's comments upon the Scale, and any suggestions for its improvement, vide article in the April, 1936 "Marine Observer".

REPORT ON COMPARISONS MADE AT SEA BY ACTUAL OBSERVATIONS WITH GERMAN SCALE OF VISIBLE EFFECTS OF WIND FORCE UPON THE SEA.

Name of Ship..

Date of Observation..
Position of Ship.............................course.....................speed.....................
Approximate depth of water..
Approximate fetch..
Force and true direction of the wind as judged from your own experience..............
To what extent did visible conditions of wave depart from German scale?
....
....
Remarks concerning this?..
Was any sound of sea clearly discernible above sounds in ship, etc.?
....
Remarks concerning this?..
....
State conditions. If sea true or confused..
....
Was there rain, or other smoothing effect upon the sea?..
....
General remarks not covered by answers to above questions:—
....
....
....
Do you consider it desirable that this scale should be accepted for general use in the British Merchant Navy?..
....
....Signature of Captain.
Date..............................193

POSTAL ARRANGEMENTS.

The quarterly numbers of the MARINE OBSERVER are published on the last Wednesdays of December, March, June and September, while the monthly supplements are published on the last Wednesday of the intervening months.

If captains of observing ships will forward to the Meteorological Office the particulars required hereunder, endeavour will be made as far as mails permit to post the latest number or supplement with appropriate forms for observational work for use on their homeward passage.

S.S.. *Captain*..

Port of Call..

Date of Homeward Departure..

Postal Address..

When this information is not given The MARINE OBSERVER or Supplement will be addressed to the Commanding Officer, s.s..............................., c/o the owners, and captains are requested to make their own arrangements for forwarding.

ICE REPORTS FORM (912).

Ice Report Forms are supplied with the MARINE OBSERVER or Supplement each month to all regular observing ships employed in the Trans North Atlantic and Southern Ocean trades. They may also be obtained by any British ship on application to the Port Meteorological Officers or Agents, addresses of whom are given on the front page of this chart.

Commanders of ships in these trades are asked to have this form completed and returned without delay at the end of each passage. A nil return is desired should no ice be sighted.

Selected Ships on the Trade Routes of the Southern Ocean are requested to add to their routine Wireless Weather reports information of floating ice seen or reported within the last 24 hours so that this information may be disseminated to the utmost advantage of all concerned.

OBSERVATIONS FOR CORRECTING THE CHARTED MAGNETIC VARIATION IN THE SOUTH INDIAN OCEAN.

It will be of great assistance if Commanders of regular observing ships using the routes traversing the southern portion of the Indian Ocean between Latitude 30°S. and Latitude 45°S. and when between the meridians of Longitude 50°E. and Longitude 100°E. when convenient will swing their ships both ways and ascertain the compass error at every 2 points of the direction of the ships head and the variation for the place of observation.

These observations should be returned direct to the Marine Superintendent of the Meteorological Office, London, by the earliest convenient mail.

These observations are desired for the purpose of correcting as far as possible the Admiralty variation charts pending the investigation of terrestrial magnetism in this region by the new Royal Research Ship "Research", they will be forwarded to the Hydrographer of the Navy. For further particulars or information regarding the observations desired, verbal application should be made to the Port Meteorological Officers in London and Liverpool.

DERELICTS AND FLOATING WRECKAGE.

Date.	Position.		Description.
	Latitude.	Longitude.	
NORTH SEA.			
2.3.37	32° 16 miles from Spurn Lt. H.		Three large tree trunks 30 to 40 feet long, 2 feet diameter.
NORTH ATLANTIC.			
2.3.37	37°20′N.	73°56′W.	Wreckage, timber bolted together, about 20 feet by 10 feet, app. part of dock.
3.3.37	51°05′N.	8°53′W.	Derelict dismasted 50 feet fishing smack *No. S 734* ("Busy Bee") dangerous.
9.3.37	40°30′N.	68°46′W.	Red conical light buoy.
13.3.37	46°09′N.	8°09′W.	Gas and whistle buoy adrift, light extinguished.
MEDITERRANEAN SEA.			
12.3.37	41°50′N.	3°25′E.	Half submerged boat.
GULF OF MEXICO.			
1.3.37	28°29′N.	91°38′W.	Log about 35 feet long, 2½ feet diameter.
NORTH PACIFIC.			
2.3.37	38°33′N.	123°45′W.	Tree trunk about 50 feet long, 10 feet diameter, roots projecting about 15 feet.
3.3.37	35°52′N.	121°39′W.	Log 25 feet long, 2 feet diameter.
8.3.37	37°45′N.	122°42′W.	White metal cylinder, 4 feet diameter.

FLEET LIST.

VOLUNTARY OBSERVING SHIPS.

The following is a complete list of British observing ships regularly carrying out voluntary services of marine meteorology with the guidance of the Marine Division of the Meteorological Office.

The names of the Captains and observing officers of observing ships, and the Senior Wireless Operators of Selected Ships are given, as ascertained from the last written return received.

Meteorological Logs, Records, and W/T Weather Registers received between the dates specified at the head of the seventh column are acknowledged by Form number, with commencing and ending dates of period covered by the returns; the date when the last return was received being given in the eighth column.

The Captains of observing ships are requested to take this acknowledgment in cordial thanks and grateful recognition to them and their observing officers and wireless operators for the returns made and the voluntary service rendered in all parts of the world.

The classification of meteorological logs, records and registers will be notified to the Captains by post card Form 1343. Only in exceptional cases will individual letters be sent to the Captains of observing ships.

The Port Meteorological Officers and Merchant Navy Agents at the ports are advised as necessary, and they will, as necessary, communicate such advice verbally by personal call upon the Captain.

Excellent Awards will be made at the end of the financial year. The names of the Captains and Principal Observing Officers gaining these awards will be published in a special list in the Marine Observer.

It is requested that prior notification of changes of service, probable periods of lay up, transfer of Captains, or other circumstances which may prevent the continuance of voluntary meteorological service at sea, may be made to the appropriate Port Meteorological Officer or Merchant Navy Agent.

Ships not making the appropriate written returns within a reasonable period will be removed from the list, steps taken to recover any instruments lent, and the free issue of the Marine Observer discontinued.

The number of voluntary observing ships is limited to a maximum total of 360.

The number of Selected Ships detailed to carry out the voluntary service provided for in Clause (C) of Article 35 of the Convention for Safety of Life at Sea, Merchant Shipping (Safety and Load Line Conventions) Act, 1932, is determined by the British proportion of the world's tonnage; and is at present 281.

Captains are requested to point out any errors which may occur in the list.

Explanation of Abbreviations.

The number appearing before the name of an observing ship in this list is her number for the time being as a British Selected Ship.

†† indicates fitted with wireless telegraphic apparatus for long range, long wave, continuous wave transmission and reception.

*† indicates fitted with wireless telegraphic apparatus for transmission and reception; fitted for reception only of long range, long wave, continuous wave.

M.V. = Motor Vessel.

Ships having no such letters after their names are steamships.

M.L. = Equipped with a complete set of tested instruments lent by the Meteorological Office for keeping the meteorological log.

M. = Ships' own mercurial barometer, found to be sufficiently accurate and reliable for the purpose of observation for making wireless weather reports.

S. = Partly or wholly equipped with tested instruments lent by the Meteorological Office for the purpose of carrying out the duties of a Selected Ship, when detailed to do so.

A. = Ships' own aneroid.

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37	Date Last Return Received.
275 †† *Abosso*, M.V. ...	J. C. Shooter	R. A. Kenyon, J. Brooks, J. H. Howgegs.	G. Arrowsmith	M.-S.	Elder Dempster Lines, Ld.	Fms. 911 & 138 29.10.36 to 5.2.37	9.2.37
122 †† *Accra*, M.V. ...	P. Sola, D.S.O., Lt.-Commr., R.N.R. ...	W. T. Godwin, A. Noble, J. A. Carter.	R. J. Dowling ...	,,	,, ,,	,, ,, 12.12.36 to 16.1.37	20.1.37
123 †† *Adda*, M.V. ...	E. V. Davies, D.S.O. ...	C. W. Nimmo, L. W. Chubb, W. A. Lawrence.	A. J. L. Edwards	,,	,, ,,	,, ,, 29.11.36 to 5.1.37	12.1.37
273 *† *Adrastus* ...	A. Shaw	S. J. Weller, E. A. H. Gepp, N. B. Jones.	G. B. Price ...	M.L.	A. Holt & Co. ...	Fm. 915 1.9.36 to 28.12.36	26.2.37
090 *† *Aeneas*	J. Hatfield	T. S. Hardy, G. Edge, A. S. Barclay.	H. G. Nuttall ...	S.	,, ,, ...	Fms. 911 & 138 2.12.36 to 5.2.37 Fm. 912 2.12.36 to 5.2.37	26.2.37 26.2.37
166 *† *Agamemnon*, M.V.	J. G. Reynard	L. Richards, T. Bell, E. B. Sandon.	A. C. Nevin ...	,,	,, ,, ...	Fms. 911 & 138 27.7.36 to 9.11.36	18.11.36
065 †† *Akaroa*	W. G. Summers ...	J. D. Morrison, W. Hill, A. M. Whiteford.	J. A. McAskill	,,	Shaw, Savill & Albion Co., Ld.	,, ,, 1.11.36 to 10.2.37	24.2.37
032 †† *Alaunia*... ...	B. H. Davies, O.B.E., R.D., Capt., R.N.R.	R. Lord, A. Mackellar, J. Caunce.	A. F. L. Crosby	,	Cunard White Star, Ld.	,, ,, 16.11.36 to 28.2.37	1.3.37
129 †† *Alcantara* ...	B. Shillitoe, R.D., Commr., R.N.R.	W. Williams, G. M. Fletcher, K. E. McClure.	C. F. McCarthy	M.-S.	Royal Mail Lines, Ld.	,, ,, 16.11.36 to 26.2.37	3.3.37
178 *† *Alipore*	L. Parfitt	J. S. G. Christian, E. F. Ferraby, H. T. Rigden.	A. G. Hastings...	M.	P. & O. S.N. Co.	,, ,, 1.11.36 to 24.1.37	15.2.37
175 †† *Almanzora* ...	T. J. C. Buret, D.S.C....	T. Davies, E. N. Gilles, S. T. Whiteside.	J. Caldwell ...	S.	Royal Mail Lines, Ld.	,, ,, 19.10.36 to 2.3.37	4.3.37
086 †† *Almeda Star* ...	H. C. Howard	R. Robson, F. A. J. Andrew, S. Haydock.	R. N. Austin ...	M.-S.	Blue Star Line, Ld.	,, ,, 22.11.36 to 13.1.37	16.1.37
022 *† *Alynbank*, M.V.	D. Gillies	A. C. Glover, J. W. Jackson, E. P. Stephens.	P. T. Brown ...	S.	A. Weir & Co. ...	,, ,, 8.10.36 to 8.11.36	9.12.36
160 *† *Amarapoora* ...	J. F. Burke	R. Treasurer, J. Grant, W. D. Tullock.	A. M. Douglas...	,,	P. Henderson & Co.	,, ,, 7.9.36 to 18.11.36	24.11.36
*† *Amsterdam* ...	B. M. Stone	F. B. Law	D. T. Wright ...	,,	L. & N. E. Rly....	,, ,, 7.12.36 to 27.2.37	4.3.37
006 †† *Andalucia Star*	R. Vernon	G. E. Barnard, F. Stokes, P. C. Reed.	R. V. Gregory ...	M.-S.	Blue Star Line, Ld.	,, ,, 2.11.36 to 21.12.36	1.1.37
113 *† *Andania* ...	F. J. Burd	G. Boyce, R. Shaw, G. S. Marr	J. L. Blanchard	S.	Cunard White Star, Ld.	,, ,, 3.1.37 to 1.3.37	3.3.37

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37.	Date Last Return Received.
*† *Anselm*	F. C. P. Harris	L. A. Sayers, F. R. Holman, G. E. Freeman.	J. O'Sullivan	S.	Booth S.S. Co., Ld.	Fms. 911 & 138 10.11.36 to 18.2.37	24.2.37
259 *† *Antonia*	W. S. Quinn	K. M. Nicholson, A. D. Fasting, W. J. Foster	W. F. Fay	,,	Cunard White Star Ld.	,, ,, 20.12.36 to 14.2.37	17.2.37
209 †† *Aorangi*, M.V.	T. V. Hill	H. J. P. Weston, W. Broughton, T. Germein.	C. F. G. Taylor	M.L.	Canadian-Australasian Line, Ld.	Fm. 915 13.8.36 to 27.11.36	10.2.37
120 †† *Apapa*, M.V.	J. H. Lawson	C. V. Evans, N. O. R. Webster	J. Rea	M.-S.	Elder Dempster Lines, Ld.	Fms. 911 & 138 8.12.36 to 21.2.37	24.2.37
017 †† *Aquitania*	R. B. Irving, O.B.E., R.D., Capt., R.N.R.	D. M. MacLean, E. Gleave, J. H. Walker.	J. N. Cragg	S.	Cunard White Star, Ld.	,, ,, 17.12.36 to 15.2.37	2.3.37
115 †† *Arandora Star*	E. W. Moulton	G. C. Case, F. Macquiston, R. L. Leech.	J. T. Williams	M.-S.	Blue Star Line, Ld.	,, ,, 20.12.36 to 10.1.37	12.1.37
248 *† *Arawa*	T. V. Roberts, R.D., Commr., R.N.R.	... ...	... ...	M.	Shaw, Savill Albion Co., Ld.	... ...	...
114 *† *Ariguani*	R. A. Thorburn, R.D., Commr., R.N.R.	C. K. Harrocks, F. Dudgeon, F. Heald.	B. M. Evans	S.	Elders & Fyffes, Ld.	Fms. 911 & 138 4.12.36 to 14.2.37	16.2.37
039 †† *Arlanza*	A. Cocks, D.S.C., R.D., Capt., R.N.R.	C. C. Dingle, H. C. Sang, F. Thacker.	G. Hunt	,,	Royal Mail Lines, Ld.	,, ,, 30.11.36 to 8.1.37	13.1.37
233 †† *Ascania*	C. G. Illingworth, R.D., Capt., R.N.R.	J. H. Kenworthy, H. G. Hayward, J. F. Drake.	J. W. Haynes	,,	Cunard White Star, Ld.	,, ,, 23.11.36 to 7.2.37	11.2.37
280 *† *Astronomer*	J. Richards	C. Boam, E. Pierce, D. Woolstenholme.	H. Wilson	M.	T. & J. Harrison	,, ,, 13.12.35 to 20.4.36	27 4.36
013 †† *Asturias*	A. Purvis	R. E. C. Wooley, L. D. Jennings, J. A. T. Maishman.	T. Bradfield	S.	Royal Mail Lines, Ld.	,, ,, 4.11.36 to 5.2.37	10.2.37
091 †† *Athenia*	W. Rennie	J. Blackwood, L. T. Napier, J. R. Henderson.	C. King	,,	Donaldson Atlantic Line.	,, ,, 13.12.36 to 29.12.36	4.1.37
028 †† *Athlone Castle*, M.V.	A. Barron	J. M. Croghan, C. E. Loraine	... ...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 28.11.36 to 14.1.37	16.1.37
102 †† *Atlantis*	F. R. Miles, R.D., Capt. R.N.R.	J. D. E. Lewis, L. T. Peterson, T. W. Stevens.	W. H. Chick	M.-S.	Royal Mail Lines, Ld.	,, ,, 21.12.36 to 1.1.37	23.1.37
240 *† *Aurania*	S. E. Stubbs, O.B.E., R.D., Commr., R.N.R.	H. G. Morgan, H. L. Pryse, G. Morris.	R. L. Thorpe	,,	Cunard White Star, Ld.	,, ,, 30.11.36 to 31.1.37	1.2.37
103 *† *Ausonia*	W. C. Battle, D.S.C., R.D., Capt., R.N.R.	J. W. Caunce, J. P. V. Evans, J. D. Armstrong.	S. A. Arnold	,,	,, ,,	,, ,, 13.12.36 to 17.1.37	28.1.37
046 *† *Australia Star*, M.V.	T. Williams	J. Davis, J. W. Thompson, N. Wilson.	J. St. C. Smart	M.	Blue Star Line, Ld.	,, ,, 9.12.36 to 4.1.37	13.2.37
133 †† *Avelona Star*	C. J. W. Jones	M. B. M. Tallack, P. A. Clark, S. H. Waters.	S. J. J. Scott	M.-S.	,, ,,	,, ,, 15.12.36 to 30.1.37	8.2.37
045 †† *Avila Star*	R. J. Thomas	S. Ranson, W. Ashton, E. Baker.	H. Varley	,,	,, ,,	,, ,, 6.12.36 to 27.1.37	30.1.37
068 †† *Balmoral Castle*	E. S. Vincent, R.D., Commr., R.N.R.	J. F. Trickey	J. H. Summers	S.	Union-Castle Mail S.S. Co., Ld.	,, ,, 5.12.36 to 21.2.37	23.2.37
*† *Balmoralwood*	L. C. Cockerell, D.S.O.	... ...	... ...	,,	Constantine Steamships, Ld.	... ...	...
037 *† *Baronesa*	R. W. Compton	J. R. Faulkner, F. W. Kent, S. W. Howell.	M. Doran	M.	Furness Lines, Ld.	,, ,, 8.9.36 to 11.11.36	18.11.36
180 *† *Beaverbrae*	E. Jones	P. Locke, D. Morrison, A. Mackie.	W. Kinninmouth	,,	Canadian Pacific Steamships, Ld.	,, ,, 21.11.36 to 6.2.37 Fm. 912 21.11.36 to 6.2.37	12.2.37 12.2.37
130 *† *Beaverburn*	A. H. Hall	A. J. Mackenzie	S. J. Taylor	,,	,, ,,	Fms. 911 & 138 5.12.36 to 1.2.37 Fm. 912 5.12.36 to 1.2.37	3.2.37 3.2.37
138 *† *Beaverdale*	H. J. Ferguson, D.S.C.	G. H. Williams, G. H. Coughlan, F. H. Stell.	J. Ormiston	M.-S.	,, ,,	Fms. 911 & 138 28.12.36 to 27.2.37 Fm. 912 28.12.36 to 27.2.37	3 3.37 3.3.37
279 *† *Beaverford*	D. Pert	P. J. Garnett, B. Ford, G. Billot.	J. J. Fraser	M.	,, ,,	Fms. 911 & 138 14.11.36 to 13.2.37	19.2.37
*† *Benarty*	A. Thomson	... ...	... ...	,,	W. Thomson & Co.	... ...	...
*† *Benwyvis*	H. J. Small	... ...	... ...	,,	,, ,,	... ...	...
069 †† *Berengaria*	G. Gibbons, R.D., Capt., R.N.R.	W. T. Fitzgerald, J. G. Bradley, J. C. Dow.	S. W. Brown	S.	Cunard White Star, Ld.	Fms. 911 & 138 19.11.36 to 11.2.37	13.2.37
145 *† *Berwickshire*	J. D. Matthews	R. A. Harris, D. W. Muir, S. H. Graham	W. Smale	,,	Turnbull, Martin & Co., Ld.	,, ,, 11.11.36 to 13.2.37	23.2.37
007 *† *Bradfyne*	M. O'Neill	H. F. Thomas, P. Evans, J Robertson.	A. Shaw	,,	Sir Wm. Reardon Smith & Partners, Ld.	,, ,, 23.3.36 to 26.8.36	1.9.36
*† *Brighton*	W. Lidbetter	E. Balcombe	A. Jones	,,	Southern Rly.	,, ,, 2.11.36 to 2.2.37	8.2.37
189 †† *Britannic*	A. T. Brown, R.D., Capt. R.N.R.	N. A. F. Kingscote, P. L. Williams, H. Hudson.	F. Clark	,,	Cunard White Star, Ld.	,, ,, 7.12.36 to 11.12.36	23.12.36
106 *† *British Colonel*	J. K. W. Kemp	D. A. Ponting	... ...	M.	British Tanker Co., Ld.	Fm. 911 11.8.36 to 21.11.36	1.12.36
038 *† *British Corporal*	J. H. Sloan	F. S. Hall, D. Lyle, H. H. Burke.	J. Darling	,,	,, ,,	Fm. 911 & 138 17.11.36 to 10.2.37	2.3.37
*† *British Endurance*, M.V.	J. Davies	W. Barnfield	... ...	,,	,, ,,	Fm. 911 13.2.37 to 23.2.37	2.3.37
154 *† *British General*	A. Scorah	A. D. Miller, P. E. Norton, G. W. Lewis.	F. Winterbottom	,,	,, ,,	Fms. 911 & 138 15.12.36 to 18.1.37	3.2.37
*† *British Grenadier*	P. V. Mills	J. H. Nelson	... ...	,,	,, ,,	Fm. 911 19.10.36 to 7.2.37	11.2.37
*† *British Hussar*	G. F. Turner	F. M. Shipway	... ...	,,	,, ,,	25.10.36 to 3.3.37	5.3.37
076 *† *British Officer*	W. Watkin-Thomas	S. Thompson	... ...	,,	,, ,,	,, 13.11.36 to 24.1.37	13.2.37
*† *British Statesman*	J. S. Copplestone	G. C. Dobson	... ...	,,	,, ,,	,, 10.11.36 to 22.1.37	15.2.37
*† *British Workman*	C. W. C. Stook	R. T. Hedley	T. Gerretty	,,	,, ,,	,, 26.10.36 to 19.2.37	1.3.37
249 *† *Buteshire*	C. A. I. Laird	P. McMillan, R. H. Pape, C. F. Cooke.	W. W. Whewell	S.	Turnbull, Martin & Co., Ld.	Fms. 911 & 138 1.1.36 to 23.5.36	24.6.36
200 *† *Cairnesk*	H. Organ	S. W. Parks	... ...	,,	Cairns, Noble & Co., Ltd.	Fm. 911 10.1.37 to 6.2.37 Fm. 912 10.1.37 to 6.2.37	11.2.37 11.2.37
*† *Cairnglen*	A. W. Melling	A. Molineaux	... ...	,,	,, ,,	Fm. 911 28.1.37 to 28.2.37 Fm. 912 28.1.37 to 28.2.37	3.3.37 3.3.37
253 *† *Cairnross*	L. Halcrow T. J. Baker	... ...	... ...	,,	,, ,,	... ...	...
031 †† *Caledonia*	A. Collie	H. L. P. King, R. Blake, R. M. Brown.	J. F. Reid	,,	Anchor Line, Ld.	Fms. 911 & 138 15.11.36 to 28.2.37 Fm. 912 15.11.36 to 28.2.37	3.3.37 3.3.37
139 †† *California*	R. W. Smart	D. G. Barr	... ...	,,	,, ,,	Fms. 911 & 138 2.12.36 to 19.12.36	31.12.36
*† *Cambria*	E. B. Turner	F. G. J. Manning	J. Pritchard	,,	L.M. & S. Rly.	,, ,, 9.11.36 to 15.12.36	21.12.36
*† *Cambridge*	R. Williams	... ...	... ...	,,	Federal S.N. Co., Ld.	... ...	...
042 †† *Cameronia*	G. B. Kelly	J. D. Mackenzie, G. Forrest, W. McCabe	J. Harvey	,,	Anchor Line, Ld.	Fm. 911 & 138 29.11.36 to 14.2.37 Fm. 912 29.11.36 to 14.2.37	16.2.37 16.2.37
252 *† *Camito*	R. J. Bostock	J. Cameron	... ...	,,	Elders & Fyffes, Ld.	Fms. 911 & 138 6.11.36 to 22.1.37	28.1.37

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37	Date Last Return Received.
117 *† *Cape of Good Hope* M.V.	A. T. McGlashan	R. J. Carnochan, P. A. Wallace, H. Evans	G. W. Pragnell	S.	Lyle Shipping Co., Ld.	Fms. 911 & 138 7.9.36 to 12.10.36	24.11.37
266 †† *Carinthia*	P. A. Murchie, O.B.E., R.D., Capt., R.N.R.	R. Conway, M. Boston, H. H. Hudson.	J. Harvey	,,	Cunard White Star, Ld.	,, ,, 6.9.36 to 24.10.36 Fm. 912 6.9.36 to 24.10.36	27.10.36 27.10.36
092 †† *Carnarvon Castle,* M.V.	E. E. Spradbrow	F. Marriott, C. C. Cutterbuch	P. Haslam	,,	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138 17.10.36 to 7.2.37	9.2.37
155 †† *Carthage*	H. M. Jack	R. A. Gerry, E. L. Biggs, M. Greasley.	F. Rose	M.-S.	P. & O. S.N. Co.	,, ,, 27.9.36 to 16.12.36	22.12.36
184 †† *Cathay*	C. B. Roche	D. West, D. W. A. Bell, L. Porter.	H. Dawson	,,	,, ,, ,,	,, ,, 1.11.36 to 3.2.37	8.2.37
127 *† *Cavina*	W. T. Forrester, O.B.E.	J. D. S. Sloper, J. A. Duff	A. N. Taylor	S.	Elders & Fyffes, Ld.	,, ,, 18.12.36 to 28.2.37	2.3.37
011 †† *Ceramic*	H. C. Elford	G. F. Cresswell, G. Hawley, W. J. Shirtcliffe.	W. Ross		Shaw, Savill & Albion Co., Ld.	,, ,, 21.10.36 to 12.2.37	18.2.37
029 *† *Cheshire,* M.V.	W. L. Foster	A. N. Williamson, C. R. Lovell, J. H. Kaye.	F. W. Greaves	,,	Bibby Bros. & Co.	,, ,, 9.11.36 to 13.1.37	18.1.37
191 *† *Chindwin*	G. Paterson	J. S. Whitehead, A. E. Hughes, J. M. Watt.	A. C. Hedley	,,	P. Henderson & Co.	,, ,, 30.11.36 to 9.2.37	17.2.37
067 *† *Chinese Prince,* M.V.	W. Finch	L. G. Taylor, W. Niven, W. R. M. Hill.	E. J. Shillabeer	M.L.	Furness Lines Ld.	Fm. 915 21.8.36 to 27.11.36	15.2.37
192 †† *Chitral*	H. Elliott Smith, R.D., Lt.-Commr., R.N.R.	J. C. Langton, R. H. Turner, K. W. Richardson.	P. R. Rowley	M.-S.	P. & O. S.N. Co.	Fms. 911 & 138 31.10.36 to 18.11.36	10.12.36
051 *† *City of Auckland*	H. G. Jenkins, O.B.E.	J. F. Hodgson	C. A. Wells	S.	Ellerman Lines, Ld.	,, ,, 15.11.36 to 10.2.37	5.3.37
135 *† *City of Barcelona*	W. Hill	R. A. Jones, A. Cran, H. G. Williams.	F. F. Alton	M.	,, ,, ,,	,, ,, 7.12.36 to 6.2.37	12.2.37
265 *† *City of Baroda*	A. V. Radcliffe, R.D., Commr., R.N.R.	W. H. Dalton, R. S. Steel D. Crook.	W. S. Clark	S.	,, ,, ,,	,, ,, 13.11.36 to 24.1.37	25.1.37
057 †† *City of Benares*	A. Lee	H. H. Asher, J. Pringle, P. Morrison.	... ...	,,	,, ,, ,,	,, ,, 25.10.36 to 2.2.37	12.2.37
158 *† *City of Cairo*	A. N. Hogg	T. B. Savigny	... ...	M.	,, ,, ,,	,, ,, 28.9.36 to 23.10.36	18.11.36
215 *† *City of Canberra*	H. R. Jackson	G. C. Longfield, R. F. Henry, G. B. Davies.	C. Kerridge	,,	,, ,, ,,	,, ,, 21.10.36 to 1.2.37	8.2.37
033 *† *City of Canton*	E. Scrymgeour	O. G. Williams, W. E. Fletcher, T. L. Vaughan.	L. J. Delaney	,,	,, ,, ,,	,, ,, 19.12.36 to 29.12.36	12.2.37
157 *† *City of Delhi*	R. E. Teague	W. J. Nixon, J. P. Arthur, D. J. Inglis.	J. O'Callaghan	S.	,, ,, ,,	,, ,, 9.11.36 to 9.1.37	22.2.37
030 *† *City of Dieppe*	H. Cartwright	J. F. MacVicar, J. F. Mitchell, J. B. Muir.	J. D. Murphy	,,	,, ,, ,,	,, ,, 23.10.36 to 6.2.37	2.3.37
049 *† *City of Evansville*	D. O. Evans	F. P. Monkton, A. G. Freeman, F. W. Woods.	F. J. Glynn	M.	,, ,, ,,	,, ,, 3.11.36 to 21.12.36	22.12.36
220 †† *City of Exeter*	D. L. Lloyd	P. C. Wilson, R. Webber	L. Hugo	S.	,, ,, ,,	,, ,, 21.9.36 to 14.2.37	24.2.37
089 *† *City of Hereford*	W. J. Merchant	N. Williams, C. W. Cross, D. W. Penberthy.	W. Macmahon	M.	,, ,, ,,	,, ,, 4.11.36 to 18.2.37	23.2.37
237 †† *City of London*	J. G. Brown	H. A. Hazeel, C. W. Armstrong, J. H. Merriman	R. Cruickshank	S.	,, ,, ,,	,, ,, 18.11.36 to 15.12.36	18.12.36
256 *† *City of Lyons*	F. W. Penberthy	H. E. Roberts, J. S. Stevenson, R. W. Tyrrell.	S. Lindsay	M.	,, ,, ,,	,, ,, 25.11.36 to 1.1.37	12.1.37
*† *City of Lille*	C. Nelson	... ...	... ...	M.	,, ,, ,,	... ...	... ...
066 †† *City of Nagpur*	N. McNeil, O.B.E.	E. H. H. Walton, F. H. Revel, J. R. F. McDougall.	A. E. Dowe	S.	,, ,, ,,	Fms. 911 & 138 19.10.36 to 29.11.36	29.12.36
074 †† *City of Paris*	D. M. Bremner	D. Campbell, W. G. Stobbs, I. McBeath.	G. Fenton	,,	,, ,, ,,	,, ,, 11.11.36 to 17.1.37	19.1.37
271 *† *City of Roubaix*	H. Spencer, D.S.C.	J. M. Milne, K. G. Gregory, T. V. Birkett.	F. V. Kinder	M.	,, ,, ,,	,, ,, 10.11.36 to 31.12.36	4.1.37
272 *† *City of Singapore*	T. R. Watkins	R. Price, G. Mathias, R. Broadbent.	R. Tibbetts	,,	,, ,, ,,	,, ,, 24.12.36 to 18.1.37	15.2.37
035 *† *City of Sydney*	E. G. Hoppins	E. P. B. Bradbury, E. M. Robertson, R. M. Hall.	D. Scott	,,	,, ,, ,,	,, ,, 24.12.36 to 25.2.37	5.3.37
167 *† *City of Tokio*	G. Burton	T. R. Pulford, F. Stranger, A. L. Beckett.	W. R. Jones	S.	,, ,, ,,	,, ,, 24.10.36 to 11.2.37	22.2.37
*† *City of Winchester*	W. S. Coughlan	H. Laird	... ...	,,	,, ,, ,,	Fm. 911 8.12.36 to 3.2.37	22.2.37
125 *† *City of Windsor*	J. B. Pattison	R. S. Mann, A. Westlake, H. B. Mole.	H. J. Coates	,,	,, ,, ,,	Fms. 911 & 138 22.11.36 to 17.12.36	29.12.36
027 *† *Clan Farquhar*	J. Waterhouse	J. Browne, T. A. Watkinson, J. Napier.	J. Morrison	M.	Clan Line Steamers, Ld.	,, ,, 17.11.36 to 4.2.37	19.2.37
050 *† *Clan Macalister*	F. J. Stenson, R.D., A.D.C., Capt., R.N.R.	M. Bruce, J. Hubbard, R. C. V Miles.	C. J. Andrews	S.	,, ,, ,,	,, ,, 29.10.36 to 10.12.36	16.1.37
222 *† *Clan Macdougall,* M.V.	L. F. Redford, Lt.-Commr., R.N.R.	W. Graham, H. F. Town, J. L. Lowrey.	G. Turner	,,	,, ,, ,,	,, ,, 15.9.36 to 23.1.37	8.2.37
101 *† *Clan Macfarlane*	W. J. Hughes	J. E. Clayton, G. A. Fox, B. Grindlay.	T. M. Ferguson	,,	,, ,, ,,	,, ,, 18.12.36 to 6.1.37	22.1.37
118 *† *Clan Macindoe*	H. Andrews	C. Rogers	D. C. Munro	,,	,, ,, ,,	,, ,, 4.12.36 to 25.12.36	4.1.37
082 *† *Clan Macnair*	R. J. W. Bennett	R. W. Cook, R. Armstrong, F. C. Doyle.	J. W. Pollock	,,	,, ,, ,,	,, ,, 1.9.36 to 17.11.36	1.12.36
255 *† *Clan Macneil*	A. Low	W. R. Thomas, I. C. Scott, E. Coultas.	N. G. Swanson	,,	,, ,, ,,	,, ,, 2.9.36 to 19.11.36	24.11.36
001 *† *Clan Macphee*	J. H. Crellin	S. S. Stammwitz, R. N. Johnson.	W. Scott	,,	,, ,, ,,	,, ,, 27.12.36 to 5.1.37	15.2.37
168 *† *Clan Mactaggart*	C. C. Parfitt	C. A. Thomas, J. De Garis, A. R. Profit.	J. G. Wood	,,	,, ,, ,,	,, ,, 29.10.36 to 5.2.37	9.2.37
*† *Clan Mactavish*	H. M. Rodger	... ...	... ...	,,	,, ,, ,,	... ...	... ...
002 *† *Clan Macwhirter*	P. M. Macfarlane	A. Woodall, J. V. Findlay, T. P. Cranwell.	D. T. Drover	,,	,, ,, ,,	Fms. 911 & 138 23.11.36 to 15.12.36	22.12.36
109 *† *Clan Morrison*	R. P. Galer, R.D., Commr., R.N.R.	R. Carpmael, F. B. Fairweather, F. Thornton.	W. Baldwin	,,	,, ,, ,,	,, ,, 13.11.36 to 4.2.37	18.2.37
*† *Clement*	O. J. P. Lee, R.D., Capt., R.N.R.	N. Caris	... ...	,,	Booth S.S. Co., Ld.	Fm. 911 14.11.36 to 19.1.37	29.1.37
041 *† *Clydebank,* M.V.	W. Broome	E. Needham, A. Cornell, G. Mordaunt.	G. W. Dickson	S.	A. Weir & Co.	Fms. 911 & 138 11.10.36 to 3.2.37	11.2.37
016 *† *Comliebank,* M.V.	V. Harper	H. S. Brown, L. W. Thorne, E. W. Dibble.	M. F. Cantillan	,,	,, ,, ...	,, ,, 6.10.36 to 14.12.36	18.12.36
185 †† *Comorin*	C. W. Cartwright, D.S.C.	R. H. Hand, G. W. du Fosse, F. D. Shaw.	E. Howard	M.-S.	P. & O. S.N. Co.	25.10.36 to 27.1.37	9.2.37
198 *† *Contractor*	H. Collins	A Moreton, J. H. Roberts, A. O. Lewis.	L. R. Smith	M.	T. & J. Harrison	,, ,, 3.11.36 to 31.1.37	1.3.37
187 *† *Coptic,* M.V.	J. Avern, Commr., R.N.R.	C. W. Sendall, L. E. Edmeads, D. Ashley.	P. M. Edwards	S.	Shaw Savill & Albion Co., Ld.	,, ,, 13.9.36 to 29.12.36	23.1.37
258 †† *Corfu*	J. H. Biggs, R.D., Commr., R.N.R.	I. A. Leitch, W. T. C. Lethbridge, H. V. Williamson.	R. V. McCreath	M.-S.	P. & O. S.N. Co.	,, ,, 11.9.36 to 1.12.36	9.12.36
*† *Corrientes*	I. McK. Brown	... ...	... ...	S.	Donaldson Line, Ld.	... ...	... ...
214 *† *Counsellor*	A. H. Frew	F. Steventon, W. Moore, J. Roberts.	K. T. Hardie	M.	T. & J. Harrison	Fms. 911 & 138 9.11.36 to 5.1.37	8.1.37
*† *Crispin*	F. P. Barlow	R. D. MacLeod	... ...	S.	Booth S.S. Co., Ld.	Fm. 911 3.10.36 to 18.12.36	21.12.36

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37.	Date Last Return Received.
036 *† *Cumberland*	E. A. Burton	J. R. Vincent, D. H. Chadwick, C. P. Robinson.	E. D. Slater	S.	Federal S.N. Co., Ld.	Fms. 911 & 138 22.8.36 to 9.12.36	16.12.36
274 *† *Custodian*	T. J. Lacey	R. E. Harvey, T. B. Littlechild, W. Pemberton.	H. J. Murray	M.	T. & J. Harrison	,, ,, 27.9.36 to 13.1.37	8.2.37
*† *Dearne*	T. H. Woodhead	G. A. Tree	...	M.L.	L.M. & S. Rly.	Fm. 915 22.5.36 to 19.9.36	2.10.36
*† *Deebank*	J. K. Brook, D.S.O., R. D., Commr., R.N.R.	A. Cameron, R. A. Lorains, M. A. Bulley.	...	,,	A. Weir & Co.	,, 16.7.36 to 27.11.36	20.1.37
204 †† *Derbyshire*, M.V.	G. L. English	G. Meggitt, D. Minto, A. Knight.	D. McLellan	S.	Bibby Bros. & Co.	Fm. 911 & 138 6.12.36 to 10.2.37	15.2.37
061 *† *Devon*	J. Blencowe	H. C. Turner, H. Watkins, K. Margerrison.	W. B. Charlton	M.	British India S.N. Co., Ld.	,, ,, 5.11.36 to 13.12.36	16.12.36
072 *† *Director*	W. Rowberry	J. E. Bromley, H. Philpott, A. A. Johnson.	C. Dodd	,,	T. & J. Harrison	,, ,, 4.10.36 to 31.1.37	8.2.37
060 *† *Discovery II*, R.R.S.	L. C. Hill, O.B.E., Lt. R.N.R.	R. Walker, H. Kirkwood, T. Oates	A. L. Morris	M.L.	Discovery Committee.	Fm. 915 1.2.36 to 17.6.36	25.7.36
058 *† *Dorset*, M.V.	J. Howell-Price	H. S. Dawson, H. G. Letts, E. G. Ott.	J. H. Dance	M.	Federal S.N. Co., Ld.	Fms. 911 & 138 28.10.36 to 26.2.37	5.3.37
142 †† *Duchess of Atholl*	W. B. Coyle, R.D., Commr., R.N.R.	W. R. Thorburn, F. Falconer, W. S. Stanley.	E. Murphy	M.-S.	Canadian Pacific	,, ,, 26.12.36 to 15.1.37	19.1.37
152 †† *Duchess of Bedford.*	C. H. Sapworth	E. J. Oatridge, F. Roberts, R. McKillop.	A. O'Sullivan	,,	Steamships, Ltd. ,, ,,	,, ,, 15.11.36 to 19.2.37 Fm. 912 15.11.36 to 19.2.37	26.2.37 26.2.37
151 †† *Duchess of Richmond.*	H. A. Moore, R.D., Capt., R.N.R.	F. W. S. Roberts, W. A. Stanley.	P. F. Yorston	S.	,, ,,	Fms. 911 & 138 29.11.36 to 18.12.36	21.12.36
143 †† *Duchess of York*	A. Rothwell	C. H. Belton, L. H. Davis, R. V. Burns.	J. W. Potts	M.-S.	,, ,,	Fms. 911 & 138 3.12.36 to 5.2.37 Fm. 912 15.1.37 to 5.2.37	8.2.37 8.2.37
*† *Duke of Argyll*	T. W. Richmond	H. Thompson, W. S. Morrow, J. Irvin.	G. Poulton	S.	L.M. & S. Rly.	Fms. 911 & 138 9.11.36 to 18.12.36	4.1.37
*† *Duke of Lancaster*	H. A. Tulley	W. Cole, W. N. Greenwood	F. Garrett	,,	,, ,, ,,	,, ,, 30.10.36 to 12.2.37	15.2.36
*† *Duke of Rothesay*	F. C. Raven	A. E. Willmott	...	,,	,, ,, ,,	,, ,, 18.11.36 to 2.2.37	3.2.37
098 †† *Dunbar Castle*, M.V.	W. S. Colbourne, O.B.E., R.D., Commr., R.N.R.	T. F. E. Wyatt	P. P. Williams	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 10.10.36 to 17.11.36	18.12.36
*† *Dunedin Star*, M.V.	D. Owen	J. Byrne	...	M.	Blue Star Line, Ld.	Fm. 911 6.11.36 to 17.2.37	1.3.37
193 †† *Dunnottar Castle*, M.V.	A. H. Blackman	R. F. Pembry, B. Dickinson	J. Gilbart	S.	Union-Castle Mail S.S. Co. Ld.	Fms. 911 & 138 12.12.36 to 30.1.37	2.2.37
052 *† *Dunster Grange*, M.V.	A. B. Friend	E. G. Raynor, A. Scybold, E. J. Stone.	J. Hammond	M	Furness Lines	,, ,, 17.11.36 to 2.2.37	8.2.37
043 †† *Dunvegan Castle*, M.V.	H. R. Northwood	P. H. Grieves	...	S.	Union-Castle Mail S.S. Co. Ld.	,, ,, 6.12.36 to 5.2.37	16.2.37
064 *† *Durham*, M.V.	H. L. Upton, D.S.C., R.D., Capt., R.N.R.	R. H. Chapman, A. W. Marshall, E. J. Ormsby.	J. V. Stockman	M.	Federal S.N. Co., Ld.	,, ,, 14.7.36 to 3.11.36	11.11.36
*† *Eastern Coast*	W. Quirk	R. E. Holt, W. H. Davies	...	M.L.	Coast Lines, Ld.	Fm. 915 17.7.36 to 28.12.36	15.2.37
077 †† *Edinburgh Castle*	C. N. Bickford	J. E. Gibbs, A. H. Parry	R. Brew	S.	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138 14.11.36 to 3.1.37	6.1.37
107 *† *El Argentino*, M.V.	F. Ellis, D.S.C.	H. N. Sherwell, G. Brighton, J. G. Freeman.	T. Horne	M.	Furness Lines	,, ,, 13.12.36 to 15.2.37	18.2.37
009 *† *Elmworth*, M.V.	A. W. Gofton	B. Wright, L. Lidguard, R. P. Watson.	M. H. Day	,,	R. S. Dalgleish	,, ,, 23.10.36 to 16.2.37	1.3.37
108 *† *Elstree Grange*	G. N. Brien, Commr. R.N.R.	J. Knight, R. M. T. Jones	M. K. Hore	,,	Furness Lines	,, ,, 11.9.36 to 26.10.36	3.11.36
110 *† *El Uruguayo*	R. Owen	G. R. Thomas, F. E. Hailstone, P. L. Grant.	...	,,	,, ,,	,, ,, 24.10.36 to 31.12.36	7.1.37
203 †† *Empress of Australia.*	W. G. Busk-Wood, R.D., Commr., R.N.R.	...	...	S.	Canadian Pacific Steamships, Ld.	...	...
034 †† *Empress of Britain.*	G. R. Parry, R.D., Commr., R.N.R.	W. S. Main, A. C. Harrisson, D. Dunn.	J. P. Jones	,,	,, ,,	Fms. 911 & 138 6.9.36 to 11.11.36	20.11.36
154 †† *Empress of Canada.*	J. F. Patrick	C. F. Alltree, G. E. Murrell, J. McQuarie.	J. Newberg	M.L.	,, ,, ,,	Fm. 915 22.5.36 to 16.9.36	27.10.36
153 †† *Empress of Japan*	L. D. Douglas, R.D., Lt.-Commr., R.N.R., W. T. Kinley	S. Fieldhouse, E. Connorton, V. E. Jaynes.	J. McClure	,,	,, ,, ,,	,, 26.6.36 to 15.10.36	24.11.36
119 †† *Erin*	R. N. Shore	W. A. Phillips, H. P. Roberts, W. N. M. Faichney.	L. Attwood	S.	Erin S.S. Co., Ld.	Fms. 911 & 138 27.11.36 to 7.2.37 Fm. 912 27.11.36 to 7.2.37	17.2.37 17.2.37
*† *Eros*	S. Clarke	...	...	,,	,, ,,	...	...
075 *† *Esperance Bay*	R. McKenzie	E. Johansen, G. Houcher, B. W. Smith	A. R. Porter	M.	G. Thompson & Co., Ld.	Fms. 911 & 138 5.11.36 to 7.12.36	1.2.37
169 *† *Essex*, M.V.	F. N. Wyatt	...	...	,,	Federal S.N. Co., Ld.	...	...
*† *Explorer*	T. G. Fraser D. C. Sandison	T. R. Ness, W. Annison	...	M.L.	Scottish Fishery Board	Fm. 915 10.8.36 to 18.12.36	31.12.36
124 *† *Fordsdale*	F. Smith	A. Warren, E. Sainsbury, D. McLean.	H. Bloxham	S.	Shaw, Savill & Albion Co., Ld.	Fms. 911 & 138 13.6.36 to 18.9.36	28.9.36
239 *† *Foylebank*, M.V.	H. J. Smith	W. Blakeney, J. E. Allen, V. Holmes.	A. J. Locke	,,	A. Weir & Co.	,, ,, 28.10.36 to 16.1.37	3.2.37
173 †† *Franconia*	P. R. Vaughan, D.S.C., R.D., Commr., R.N.R. A. T. Brown, R.D., Capt. R.N.R.	F. Patchett, B. Tanner, D. McLean.	T. F. Wyatt	,,	Cunard White Star Ld.	,, ,, 30.8.36 to 20.10.36	22.10.36
159 *† *Fresno City*, M.V.	J. W. Potts	P. J. Ryan, P. W. Davies, E. Scott.	E. P. Place	,,	Sir Wm. Reardon Smith & Partners, Ld.	,, ,, 20.11.36 to 18.1.37	29.1.37
186 †† *Georgic*, M.V.	B. B. Oram, R.D., Commr., R.N.R.	F. E. Patchett, J. V. Locke, L. Thompson.	H. S. Reid	,,	Cunard White Star, Ld.	Fms. 911 & 138 31.12.36 to 6.1.37	22.1.37
234 *† *Glaucus*	B. T. Batho	W. K. Kerr, W. T. Harris, R. L. Cladingbowl.	G. E. Turner	M.L.	A. Holt & Co.	Fm. 915 4.7.36 to 4.12.36	15.2.37
026 *† *Glenbank*, M.V.	E. N. K. Blackmore	C. Sherwood, W. McBean	W. Williamson	S.	A. Weir & Co.	Fms. 911 & 138 1.11.36 to 14.1.37	23.2.37
123 *† *Glengarry*, M.V.	E. Waite	H. K. Martin, C. C. Reeder	P. Mayo	M.	Glen Line, Ld.	,, ,, 15.12.36 to 6.1.37	8.2.37
218 *† *Harmonides*	F. R. Elwell	D. T. Griffiths, J. Kirkwood, V. Green.	J. E. Ellis	S.	Houston Line, Ld.	,, ,, 6.11.36 to 5.1.37	9.2.37

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37.	Date Last Return Received.
262 *† *Hauraki*, M.V.	A. W. Creese ...	D. C. N. Champion, W. McGarry, J. H. Ibbotson.	E. Gittings ...	M.L.	Union S.S. Co., of N.Z., Ld.	Fm. 915 8.8.36 to 24.11.36	10.2.37
171 *† *Hertford* ...	J. Burton Davies ...	W. V. Canton, H. Cockerrill, M. English.	P. Moroney ...	S.	Federal S.N. Co., Ld.	Fms. 911 & 138 10.7.36 to 29.11.36	9.12.36
*† *Hibernia* ...	J. R. Bulmer	W. E. Meade	D. T. Rockey ...	,,	L.M. & S. Railway	,, ,, 17.9.36 to 23.12.36	8.1.37
182 †† *Highland Brigade*, M.V.	R. G. Clayton, D.S.C., R.D., Capt., R.N.R.	F. J. Swallow, N. Seaton, M. B. Hall, T. Powell, R. Mayo.	A. Reynolds ...	M.-S.	Royal Mail Lines, Ld.	,, ,, 26.10.36 to 23.2.37	26.2.37
116 †† *Highland Chieftain*, M.V.	J. A. Hodges, R.D., Commr., R.N.R.	E. G. George, W. B. Avison	T. Desboro ...	,,	,, ,, ,,	,, ,, 9.12.36 to 23.1.37	2.2.37
099 †† *Highland Monarch*, M.V.	H. Womersley	T. Fraser, G. Thomas, P. Bennock.	E. F. Weatherhead.	,,	,, ,, ,,	,, ,, 14.9.36 to 2.11.36	9.11.36
230 †† *Highland Patriot*, M.V.	R. H. Robinson ...	C. D. M. Vine, G. E. Leach, W. B. Tennant.	M. J. Carpenter	,,	,, ,, ,,	,, ,, 10.12.36 to 29.12.36	4.1.37
250 †† *Highland Princess* M.V.	A. E. Cornich	H. V. Todd, H. Davies, H. Bowker.	C. P. Thayne ...	,,	,, ,, ,,	,, ,, 14.10.36 to 8.2.37	12.2.37
261 *† *Huntingdon* ...	A. E. Taylor, R.D., Commr., R.N.R. ...	R. I. West, C. Cremin, G. Willis.	L. Gibson ...	S.	Federal S.N. Co., Ld.	,, ,, 13.11.36 to 18.12.36	13.2.36
*† *Imperial Star* M.V.	D. R. Macfarlane ...	D. G. Wenbourne, G. W. D. Davies, L. Laurenson.	C. North ...	M.	Blue Star Line, Ld.	Fm. 911 20.10.36 to 20.1.37	9.2.37
260 *† *Inanda*	W. H. Gibbings ...	P. B. Jones, E. P. Simmons, B. H. Band.	E. J. Cook ...	,,	T. & J. Harrison	Fms. 911 & 138 15.11.36 to 17.2.37	26.2.37
197 *† *Ingoma.* ...	J. T. Ling	D. N. Penfold, J. L. Curle, F. R. Robinson.	R. Hammond ...	,,	,, ,,	,, ,, 13.12.36 to 22.1.37	27.1.37
144 *† *Inverbank*, M.V.	D. O'Donnell ...	L. C. Smith, D. Jackson.	H. Armstrong ...	S.	A. Weir & Co. ...	,, ,, 30.7.36 to 9.10.36	11.11.36
*† *Isle of Guernsey*	H. M. Golding	W. F. Mason, E. F. Hewson.	T. J. Barron ...	,,	Southern Rly. ...	,, ,, 19.10.36 to 26.2.37	3.3.37
*† *Isle of Jersey* ...	F. W. Hodges	F. Tront, H. J. Pellow ...	T. Stubbs ...	,,	,, ,, ...	,, ,, 12.12.36 to 5.2.37	8.2.37
*† *Isle of Sark* ...	R. J. Large, M.B.E. ...	C. Abbey	T. J. Barron ...	,,	,, ,, ...	,, ,, 18.11.36 to 29.1.37	30.1.37
*† *Ixion*	W. A. Turner ...	A. R. Davidson, J. Gould, W. I. Symes.	... ...	M.L.	A. Holt & Co. ...	Fm. 915 19.9.36 to 2.12.36	15.2.37
226 *† *Javanese Prince*, M.V.	C. S. Smith	H. Patterson, W. O. Young, J. T. Gray.	J. A. Campbell	,,	Furness Lines ...	,, 22.8.36 to 29.12.36	26.2.37
188 †† *Kaisar-i-Hind* ...	M. G. Draper, R.D., Commr., R.N.R.	H. J. Cholerton, E. R. Rose, A. L. Harper.	J. D. Downie ...	M.-S.	P. & O. S.N. Co.	Fms.911 & 138 10.7.36 to 18.11.36	24.11.36
206 *† *Karamea*, M.V....	C. M. Andrews ...	L. B. Miller, N. S. Milne, V. A. Hickson.	A. Stratton ...	S.	Shaw Savill & Albion Co., Ld.	,, ,, 17.7.36 to 11.11.36	23.11.36
*† *Kemmendine* ...	W. C. C. Plage ...	... ...	... ...	M.	P. Henderson & Co., Ld.	... ...	...
096 *† *Kelso*	P. Pickering	... ...	... ...	S.	Ellerman Wilson Line Ld.	... ...	...
*† *Kent*	J. V. Williams ...	J. W. Coen	... ...	,,	Federal S.N. Co., Ld.	Fm. 911 8.11.36 to 22.12.36	15.2.37
147 †† *Laconia* ...	J. C. Townley, R.D., Capt., R.N.R. ...	G. T. Kavanagh, J. Ashcroft, A. Thompson.	R. M. Shore ...	,,	Cunard White Star, Ld.	Fms. 911 & 138 9.12.36 to 27.12.36 Fm. 912 9.12.36 to 29.12.36	1.1.37 1.1.37
062 †† *Lancastria* ...	J. G. P. Bisset, R.D., Commr., R.N.R. ..	J. T. Jones, A. G. Cuthill, O. V. Lucas.	V. Newton ...	,,	,, ,, ,,	Fm. 911 & 138 23.11.36 to 14.2.37 Fm. 912 23.11.36 to 14.2.37	16.2.37 16.2.37
112 *† *La Rosarina* ...	S. Mathews	W. S. Hamblin, T. C. Townsend, J. C. Murray.	J. C. Harris ...	,,	Furness Lines ...	Fms. 911 & 138 14.9.36 to 10.11.36	20.11.36
267 *† *Lassell*, M.V. ...	W. W. Watson ...	D. R. Matheson, T. J. Sweeney, B. Green.	T. Allen ...	S.	Lamport & Holt Line, Ld.	,, ,, 27.11.36 to 23.2.37	1.3.37
083 *† *Lautaro*, M.V. ...	H. B. Reece, R.D., Capt., R.N.R.	G. Gerety, R. Skellorn, A. Turner.	W. A. Johnston	M.	Pacific S.N. Co....	,, ,, 9.7.36 to 20.10.36	26.10.36
251 *† *Levernbank*, M.V.	H. A. Jones	A. J. Falnasser, G. C. Beaton, T. J. Howell	H. S. Matheson	S.	A. Weir & Co. ...	,, ,, 11.9.36 to 15.1.37	27.1.37
093 *† *Llandaff Castle*...	G. H. Fogden	W. C. J. Smith	... ...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 20.10.36 to 6.12.36	22.12.36
094 *† *Llandovery Castle*	C. E. H. Aylen, R.D., Commr., R.N.R.	J. G. P. Lewis	A. E. Hunter ...	,,	,, ,, ...	,, ,, 30.11.36 to 31.1.37	9.2.37
097 †† *Llangibby Castle*, M.V.	R. W. Goodacre, R.D., Commr., R.N.R.	J. Trayner, H. S. Warren ...	P. S. Brown ...	,,	,, ,, ...	,, ,, 16.12.36 to 31.12.36	7.1.37
216 *† *Llanstephan Castle*	B. Ray	D. W. Sowden	R. Brew ...	,,	,, ,, ...	,, ,, 24.11.36 to 29.1.37	3.2.37
084 *† *Lobos*, M.V. ...	H. O. Pattison ...	A. B. Powell, G. Wardale ...	E. W. Bradley	M.	Pacific S.N. Co....	,, ,, 26.10.36 to 13.2.37	18.2.37
137 *† *Logician* ...	E. B. Curphey ...	R. H. Ridley, W. S. Eustance, G. H. Howard.	R. V. Tibber ...	,,	T. & J. Harrison	,, ,, 25.8.36 to 11.11.36	20.11.36
*† *Loriga*	A. C. Taylor	J. Williams	... ...	M.	Pacific S.N. Co. Ld.	Fm. 911 21.11.36 to 13.2.37	18.2.37
008 *† *Losada*, M.V. ...	R. E. Dunn, O.B.E. ...	R. J. G. Goodwin	A. R. Humphries	,,	,, ,, ,, ,,	Fms. 911 & 138 17.12.36 to 5.1.37	9.1.37
232 *† *Madura*... ...	J. A. Wright	D. A. Jones, G. Suter, R. A. Bidmead.	H. O. Francis ...	,,	British India S.N. Co., Ld.	,, ,, 23.11.36 to 17.1.37	2.2.37
*† *Mahia*	W. T. Thompson ...	W. G. Bolton, R. A. Costa ...	D. Irwin ...	S.	Shaw, Savill & Albion Co., Ld.	Fm. 911 17.10.36 to 16.2.37	91.2.37
140 *† *Mahratta* ...	W. Hill	W. Nuttall, A. G. Gorham ...	J. Turner ...	M.	T. & J. Brocklebank, Ld.	Fms. 911 & 138 15.12.36 to 9.1.37	8.2.37
014 *† *Mahronda* ...	L. T. Owen	J. B. Leigh, J. B. Newman, W. F. Harris.	W. Ritch ...	,,	,, ...	,, ,, 1.1.37 to 19.1.37	15.2.37
015 *† *Mahsud* ...	C. Lindsay-Miller ...	H. Simpson, J. S. Richardson, H. Fosbrooke.	R. Burton ...	,,	,, ...	,, ,, 29.9.36 to 8.12.36	18.12.36
018 *† *Makalla* ...	J. Greenall	G. E. Jones, H. Gillespie, D. O'Connor.	W. Fallowfield	,,	,, ...	,, ,, 3.11.36 to 22.1.37	29.1.37
236 *† *Malayan Prince*, M.V.	W. Irvine	S. A. Headon, W. R. Harries, A. A. Spilman.	W. B. Ward ...	M.L.	Furness Lines ...	Fm. 915 13.6.36 to 25.9.36	17.11.36
219 *† *Malda*	H. M. Edmondson ...	J. F. Twite, A. W. Willis, H. L. Collinson.	A. Gilman ...	M.	British India S.N. Co., Ld.	Fms. 911 & 138 22.10.36 to 11.2.37	17.2.37
195 †† *Maloja*	J. B. Browning, R.D., Commr., R.N.R.	J. C. Lapage, R. G. Wood, L. J. Cook.	A. Macbeth ...	M.-S.	P. & O. S.N. Co.	,, ,, 20.9.36 to 23.12.36	31.12.36
179 *† *Manchester Port*	P. Linton	W. Hine, F. L. Osborne, J. C. Briggs.	P. Francis ...	S.	Manchester Liners, Ld.	,, ,, 23.11.36 to 31.1.37	8.2.37
281 *† *Manchester Producer.*	J. Makin	L. A. Muir, W. H. Downing, R. O. Venn.	T. A. Sandham	,,	,, ,,	,, ,, 19.1.37 to 16.2.37	24.2.37
146 *† *Mandasor* ...	G. Shaw	G. McL. Reid, S. Broughton, A. E. Evans.	G. T. Spears ...	M.	T. & J. Brocklebank, Ld.	,, ,, 8.10.36 to 21.12.36	1.1.37
*† *Maron*, M.V. ...	J. H. Blyth, D.S.C. ... E. Marriott	J. M. Whittle, E. M. Robb, J. G. Bowie.	... ...	M.L.	A. Holt & Co. ...	Fm. 915 29.5.36 to 9.9.36	15.2.37
213 †† *Mashobra* ...	J. L. Beatty	L. Osborne, N. Lucas, N. Pirie.	J. J. Simpson ...	M.-S.	British India S.N. Co., Ld.	Fms. 911 & 138 7.12.36 to 18.2.37	1.3.37
235 †† *Mataroa* ...	A. McIntosh	E. B. Macfarren, R. S. Winder, R. Frisley.	J. P. Carey ...	S.	Shaw, Savill & Albion Co., Ld.	,, ,, 3.10.36 to 9.1.37	16.1.37

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37	Date Last Return Received
023 *† *Matheran*	W. T. King	A. L. Austin, R. Penston, W. Spencer.	J. D. Jones	M.	T. & J. Brocklebank, Ld.	Fms. 911 & 138 6.12.36 to 12.2.37	16.2.37
024 *† *Matra*	N. P. Cornish	T. H. Wardle, E. Watson, C. W. C. Parry.	E. R. Capps	,,	,, ,,	,, ,, 25.8.36 to 8.11.36	20.11.36
278 *† *Middlesex*	H. T. Wilde	A. Brown, J. Burrow, R. A. Belfield.	S. Jones	S.	Federal S.N. Co., Ld.	,, ,, 17.8.36 to 4.1.37	9.1.37
194 †† *Moldavia*	C. S. Parker	H. R. Prowse	... ...	M.-S.	P. & O. S.N. Co.	,, ,, 6.9.36 to 24.1.37	16.2.37
199 †† *Mongolia*	H. R. Rhodes	E. J. Spurling, J. Paice, G. MacLean.	A. Morris	,,	,, ,, ,,	,, ,, 8.8.36 to 12.11.36	23.11.36
070 †† *Montcalm*	A. R. Meikle, R.D., Capt., R.N.R.	F. Ricks, W. J. P. Roberts, R. J. Hyland.	J. Biggins	S.	Canadian Pacific Steamships, Ld.	,, ,, 24.11.36 to 8.1.37 Fm. 912 24.11.36 to 8.1.37	13.1.37 13.1.37
149 †† *Montclare*	W. S. Brown	D. Ewing, G. Mowatt, J. Roche.	H. A. Bowman	M.-S.	,, ,,	Fms. 911 & 138 6.12.36 to 27.2.37 Fm. 912 6.12.36 to 27.2.37	3.3.37 3.3.37
150 †† *Montrose*	C. Richardson	N. Duck, C. Belton, N. Scallow.	A. G. Hill	S.	,, ,,	Fms.911 & 138 16.11.36 to 1.1.37	4.1.37
164 †† *Mooltan*	F. E. French, R.D., Capt., R.N.R.	J. D. Strike, R. B. Webster, W. H. C. Wood-Roe.	H. Williamson	M.-S.	P. & O. S.N. Co.	,, ,, 22.8.36 to 25.11.36	7.12.36
196 †† *Mulbera*	W. A. Grant-Pyves	J. L. Richardson, N. K. Boyd	B. Mahony	,,	British India S.N. Co., Ld.	,, ,, 1.11.36 to 5.2.37	1.3.37
078 *† *Myrtlebank*, M.V.	C. S. Holbrook	G. E. Linfield, T. H. Welton, S. Dowdeswell.	A. W. Mosley	S.	A. Weir & Co.	,, ,, 15.11.36 to 23.1.37	9.2.37
073 *† *Nagara*	A. R. Murley	C. L. Frazer, P. P. Matthews, F. G. Dawson.	E. Fitzgerald	M.	Royal Mail Lines, Ld.	,, ,, 5.12.36 to 29.1.37	8.2.37
201 †† *Naldera*	E. F. Hannan, R.D., Commr., R.N.R.	M. H. D'Aeth, F. W. J. Pearce, E. R. Physick.	R. T. Soans	S.	P. & O. S.N. Co.	,, ,, 17.9.36 to 13.12.36	9.1.37
*† *Nankin*	T. H. Scott White	G. Reed	... ...	M.L.	Eastern and Australasian S.S. Co., Ld.	Fm. 915 12.8.36 to 10.11.36	15.1.36
227 *† *Nardana*	C. Dorkin-White	T. Bradwood, H. Goater, D. W. Austin.	S. V. Knight	M.	British India S.N. Co., Ld.	Fms. 911 & 138 15.6.36 to 19.10.36	20.11.36
202 †† *Narkunda*	J. K. Chaplin, R.D., Capt., R.N.R. W. D. C. Smith	W. W. Gow, W. N. Eade, W. R. Stockdale.	C. W. Herbert	M.-S.	P. & O. S.N. Co.	,, ,, 15.11.36 to 17.2.37	22.2.37
†† *Nascopie*	T. F. Smellie	A. H. Dobson	... ...	S.	Hudson's Bay Co.	Fm. 911 14.7.36 to 1.10.36	22.10.36
257 *† *Natia*	E. A. Bridges	J. Whittle	... ...	M.	Royal Mail Lines, Ld.	Fms. 911 & 138 28.12.36 to 18.2.37	24.2.37
*† *Nellore*	T. J. Mills	A. G. Rose, J. H. Simpson, H. T. Rozea.	M. Marwick	M.L.	Eastern and Australasian S.S. Co., Ld.	Fm. 915 2.9.36 to 7.12.36	10.2.37
162 *† *Nestor*	J. J. Power	G. A. Gatt, W. B. Blair, I. Skurray.	C. Townsend	S.	A. Holt & Co.	Fms. 911 & 138 25.11.36 to 29.12.36	4.1.37
136 *† *Newfoundland*	T. H. Webber	J. E. Wilson, J. L. Macklin, F. H. Jones.	W. C. Brock	,,	Furness Lines	,, ,, 9.12.36 to 6.1.37 Fm. 912 9.12.36 to 6.1.37	12.1.37 12.1.37
*† *New Zealand Star*, M.V.	J. B. Hall	J. C. Lewis, R. H. Soloman, L. Vernon.	... ...	M.	Blue Star Line, Ld.	Fm. 911 27.9.36 to 5.1.37	8.1.37
210 *† *Niagara*	W. Martin	A. H. S. Gell, A. J. McKenzie, F. S. Bowman.	G. M. Power	M.L.	Canadian-Australasian Line, Ld.	Fm. 915 16.7.36 to 31.10.36	21.12.36
*† *Northern Coast*	H. Cameron J. Williams F. Mara	R. E. Holt, F. H. Thomson, M. Gallagher.	... ...	,,	Coast Lines, Ld.	,, 6.4.36 to 29.8.36	19.9.36
181 *† *Nova Scotia*	J.W. Murphy	E. E. Sainty, C. H. Kenyon, R. Handley.	G. Penketh	S.	Furness Lines	Fms. 911 & 138 14.11.36 to 4.2.37 Fm. 912 14.11.36 to 4.2.37	8.2.37 8.2.37
243 *† *Opawa*, M.V.	H. G. B. Field	S. Jarvis, J. McCulloch, J. Montcrief.	P. Fleming	M.	New Zealand Shipping Co., Ld.	Fms. 911 & 138 1.9.36 to 14.12.36	3.2.37
172 †† *Orama*	E. P. Cameron, R.D., Capt., R.N.R.	H. R. Treseder, G. H. Jones, H. Barker.	W. F. Holm	S.	Orient S.N. Co., Ld.	,, ,, 12.10.36 to 12.1.37	20.1.37
080 *† *Orari*, M.V.	J. G. Almond	C. J. Cordran, H. R. Smith, J. Cree.	W. E. Fordham	M.	New Zealand Shipping Co., Ld.	,, ,, 12.10.36 to 19.2.37	26.2.37
246 †† *Orbita*	J. H. Kirkwood	D. Jones, D. W. Hutchison, F. Williams.	D. H. Sinclair	M.-S.	Pacific S.N. Co.	,, ,, 9.11.36 to 1.1.37	21.1.37
087 †† *Orduna*	C. W. Benson	R. D. Eckford, B. Morgan, E. C. Hicks.	W. G. Sutherland	,,	,, ,,	,, ,, 20.10.36 to 18.12.36	23.12.36
148 †† *Orford*	M. J. Sarson	J. N. Hulse, G. R. Grandage, J. S. Stratford.	J. Macdonald	,,	Orient S.N. Co., Ld.	,, ,, 9.11.36 to 9.2.37	13.2.37
019 †† *Orion*	A. L. Owens, R.D., Capt., R.N.R.	P. Sargent, E. M. Mackay, A. W. Adams.	A. F. Edwards	,,	,, ,, ,,	,, ,, 13.9.36 to 15.12.36	19.12.36
174 †† *Ormonde*	G. G. Thorne, R.D., Capt. R.N.R.	L. Sly, R. Roberts, E. Walmesley.	A. Seaton	S.	,, ,, ,,	,, ,, 17.8.36 to 17.11.36	7.12.36
085 †† *Orontes*	F. R. O'Sullevan	J. K. Johnson, J. D. Birch, W. A. Cooke.	N. A. Boon	M.-S.	,, ,, ,,	,, ,, 28.9.36 to 29.12.36	11.1.37
055 †† *Oronsay*	C. G. Matheson, D.S.O., R.D., Commodore, R.N.R.	C. Pinckney, J. H. Smythe, W. Storey.	P. T. Darby	S.	,, ,, ,,	,, ,, 30.8.36 to 1.12.36	19.12.36
*† *Oropesa*	R. E. Dunn, O.B.E.	... ...	... ...	M.	,, ,, ,,	... ...	... ...
156 †† *Otranto*	L. V. James, D.S.C.	F. R. F. Wilson, R. B. Stannard, D. Hodges.	J. L. Curry	M.-S.	,, ,, ,,	Fms. 911 & 138 26.10.36 to 26.1.37	3.2.37
*† *Oxfordshire*	P. G. Cooper	P. G. Latimer, A. Thompson, E. B. Rhead.	... ...	S.	Bibby Bros. & Co.	Fm. 911 12.10.36 to 17.12.36	16.1.37
044 *† *Pacific Exporter*, M.V.	C. E. Holland, R.D., Commr., R.N.R.	E. Jones, S. Lavis, S. J. Hardy.	W. J. Moore	,,	Furness Lines	Fms. 911 & 138 13.10.36 to 10.1.37	14.1.37
*† *Paris*	C. G. G. Munton	E. W. Smith	W. Kelley	,,	Southern Rly.	,, ,, 8.12.36 to 28.2.37	2.3.37
*† *Penola*, Schooner	R. E. D. Ryder, Lieut., R.N.	Q. Riley, B. Roberts, I. F. Meiklejohn.	... ...	M.L.	British Graham Land Expedition.	Fm. 915 13.9.34 to 21.1.35	21.5.36
040 *† *Port Adelaide*	R. Williams	F. R. Gorman, E. G. Jones, R. Aylward.	J. L. Stewart	S.	Commonwealth & Dominion Line, Ld.	Fms. 911 & 138 9.9.36 to 18.2.37	1.3.37
238 *† *Port Alma*, M.V.	S. C. Cotteli	G. Puttick, T. L. Kidwell, F. W. Elgar.	L. D. Corbett	,,	,, ,, ,,	,, ,, 16.2.36 to 22.5.36	8.6.36
128 *† *Port Auckland* M.V.	C. A. Robinson	E. C. Read, F. Taylor, E. Wheeler.	H. Jacobs	,,	,, ,, ,,	,, ,, 23.10.36 to 2.12.36	16.12.36
268 *† *Port Bowen*	A. H. Brown	R. E. Garner, E. W. Rogerson, D. N. Harries.	A. Naylor	,,	,, ,, ,,	,, ,, 15.5.36 to 5.9.36	28.9.36
190 *† *Port Chalmers*, M.V.	J. E. Compton	W. B. Hopkins, P. H. Pendrick, A. Alexander.	T. Bagnall	,,	,, ,, ,,	,, ,, 28.5.36 to 30.9.36	8.10.36
*† *Port Darwin*	J. J. Hudson	K. D. Morgan, V. G. Battle, R. J. W. Baxter.	J. D. Lovelock	,,	,, ,, ,,	,, ,, 13.5.36 to 6.10.36	22.10.36

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37.	Date Last Return Received
095 *† *Port Dunedin*, M.V.	G. W. Hearn	A. Brown, W. B. Craig, P. R. Bradnee.	W. J. B. Craig ...	S.	Commonwealth & Dominion Line, Ld.	Fms. 911 & 138 20.5.36 to 29.8.36	9.9.36
010 *† *Port Fremantle*, M.V.	R. S. Durham, D.S.O.	H. B. Walker, G. W. Horton, P. Becham.	D. T. de Witt ...	,,	,, ,, ,,	,, ,, 22.7.36 to 7.12.36 Fm. 912 22.7.36 to 7.12.36	10.12.36 10.12.36
163 *† *Port Gisborne*, M.V.	W. G. Higgs	N. J. Dedman	... ...	,,	,, ,, ,,	Fms. 911 & 138 31.10.36 to 9.2.37	1.3.37
*† *Port Hobart*, M.V.	T. Kippins, D.S.C. ...	J. S. Moate	... ...	,,	,, ,, ,,	Fm. 911 27.7.36 to 20.11.36 Fm. 912 27.7.36 to 20.11.36	3.12.36 3.12.36
*† *Port Jackson*, M.V.	S. W. Hayter	... ...	... ...	,,	,, ,, ,,	... ...	...
111 *† *Port Townsville*, M.V.	S. W. Hayter	J. L. Porter, E. F. Beard, W. D. Henderson.	E. F. Whibley ...	,,	,, ,, ,,	Fms. 911 & 138 26.6 36 to 10.10.36	26.10.36
177 *† *Port Wellington*	R. Needham	W. M. Clough, G. F. Pannett, D. A. Bates.	W. L. Poingdestre	,,	,, ,, ,,	,, ,, 17.4.36 to 2.9.36	14.9.36
003 *† *Port Wyndham*, M.V.	W. Gilling	J. G. Thom, G. B. Lovegrove, R. C. Webb.	W. Jones ...	,,	,, ,, ,,	,, ,, 22.9.36 to 30.12.36	6.1.37
*† *Prague*	F. E. Beeching, D.S.C.	A. W. Greenham, F. Woods...	A. Potter	,,	L. & N.E. Rly. ...	,, ,, 9.11.36 to 6.2.37	10.2.37
063 *† *Queen City* ...	R. V. Arkwright ...	J. C. H. Thornhill	... ...	,,	Sir Wm. Reardon Smith & Partners, Ld.	Fm. 911 8.1.36 to 6.1.37	22.2.37
183 †† *Queen Mary* ...	R. V. Peel, R.D., Commodore, R.N.R.	H. V. Clarke, E. J. R. Pollitt, F. G. Watts.	A. H. Farman ...	,,	Cunard White Star, Ld.	Fms. 911 & 138 26.11.36 to 28.2.37	3.3.37
165 *† *Radnorshire*, M.V.	D. E. Evans	E. Saville, J. A. A. Evans, F. Gardiner.	I. T. Davies ...	,,	A. Holt & Co. ...	,, ,, 16.10.36 to 4.1.37	18.1.37
205 †† *Rajputana* ...	W. A. Cotching ...	I. M. Sinclair, R. W. Richardson, R. B. Nowell.	W. Banbury ...	M.-S.	P. & O. S.N. Co.	,, ,, 8.11.36 to 14.2.37	15.2.37
228 †† *Ranchi*	C. E. Short	C. Hutchinson, J. MacArthur, R. S. Kerridge.	W. Stevenson ...	,,	,, ,, ,,	,, ,, 13.9.36 to 13.1.37	15.1.37
224 †† *Rangitane*, M.V.	A. W. McKellar, R.D., Capt., R.N.R.	M. L. Warren, S. R. Leggett, K. Barnett.	W. E. Smith ...	,,	New Zealand Shipping Co., Ld.	,, ,, 14.11.36 to 14.2.37	22.2.37
217 †† *Rangitata*, M.V.	E. Holland	P. M. Church, D. H. Clegg, F. Jones.	H. R. Dedman	,,	,, ,, ,,	,, ,, 17.10.36 to 18.1.37	9.2.37
105 †† *Rangitiki*, M.V.	H. Barnett	H. Baddeley, G. Gregory ...	L. Horn ...	,,	,, ,, ,,	,, ,, 20.9.36 to 22.12.36	8.1.37
207 †† *Ranpura* ...	J. M. Legg	A. C. Halliday, C. H. Stokes, G. Randall.	J. R. C. Johnson	,,	P. & O. S.N. Co.	,, ,, 2.8.36 to 4.11.36	24.11.36
071 †† *Rawalpindi* ...	R. C. Dene	A. P. Godfrey, J. D. Green, H. P. Mallett.	S. W. Sharp ...	,,	,, ,, ,,	,, ,, 16.8.36 to 18.11.36	23.11.36
247 *† *Recorder* ...	J. J. Egerton	G. McGuinness, L. Harriman, D. Wolstenholme.	W. Murray ...	M.	T. & J. Harrison	,, ,, 5.10.36 to 27.11.36	7.12.36
132 *† *Reina del Pacifico*, M.V.	A. Ridyard, O.B.E. ...	J. K. Campbell, R. Bridson, S. E. Ayland.	J. B. Stone ...	,,	Pacific S.N. Co. ...	,, ,, 9.11.36 to 30.12.36	4.1.37
276 †† *Remuera* ...	F. W. Robinson ...	H. Hill, R. S. Warren, J. D. Bennett.	E. Lawrence ...	S.	New Zealand Shipping Co., Ld.	,, ,, 20.8.36 to 27.11.36	9.12.36
*† *Rhexenor* ...	R. C. Neville	G. E. Towill, P. Dunsine, J. T. Jones.	... ...	M.L.	A. Holt & Co. ...	Fm. 915 29.4.36 to 17.8.36	21.10.36
*† *Rotorua* ...	C. B. Lamb	R. H. Carter, L. W. Fulcher, N. Warren.	... ...	,,	New Zealand Shipping Co., Ld.	,, 1.3.36 to 28.6.36	15.8.36
*† *Ruahine* ...	G. Kinnell	J. E. Clarke	... ...	S.	,, ,, ,,	Fm. 911 11.10.36 to 5.2.37	24.2.37
*† *St. Helier* ...	R. Pitman	T. E. Martin	E. Trapnell ...	,,	G.W. Railway ...	Fms. 911 & 138 3.11.36 to 30.1.37	3.2.37
*† *St. Julien* ...	L. Richardson	T. Wilmot	... ...	,,	,, ,, ...	,, ,, 1.7.36 to 17.10.36	20.10.36
*† *St Patrick* ...	... ...	... ...	... ...	,,	,, ,,	... ...	...
100 †† *Samaria* ...	J. McRostie	W. F. Dennison, C. D. Smith, B. Harrison.	R. A. J. Owlett	,,	Cunard White Star, Ld.	Fms. 911 & 138 15.11.36 to 21.2.37	26.2.37
*† *San Adolfo*, M.V.	A. P. Wallace	W. S. Lamb	... ...	M.-S.	Eagle Oil & Shipping Co., Ld.	Fm. 911 5.12.36 to 21.1.37	13.2.37
*† *San Alberto*, M.V.	C. Vidot	R. McKenzie	... ...	M.	,, ,,	,, 28.12.36 to 24.2.37	3.3.37
*† *San Alvaro*, M.V.	A. Riddel, R.D., Capt., R.N.R.	N. D. Swaffin	... ...	M.-S.	,, ,,	,, 13.11.36 to 15.2.37	16.2.37
*† *San Arcadio*, M.V.	S. Perry	J. H. Gay, D. Mason, W. Goebel.	N. J. Leitch ...	M.	,, ,,	Fms. 911 & 138 10.11.36 to 26.1.37	3.3.37
*† *Scotia*	W. T. Griffith	N. Lloyd Williams	J. H. Rockey ...	S.	L.M. & S. Railway	,, ,, 7.12.36 to 6.2.37	14.2.37
170 †† *Scythia*	C. H. Bate, R.D., Capt., R.N.R.	W. K. Hunter, S. A. Jones, R. G. Roberts.	R. Greenall ...	,,	Cunard White Star, Ld.	Fms. 911 & 138 1.12.36 to 8.2.37 Fm. 911 1.12.36 to 8.2.37	10.2.37 10.2.37
211 *† *Shropshire*, M.V.	R. S. Evans, O.B.E. ...	G. W. Dobson, A. E. Evans, A. E. Young.	G. C. Talbot ...	,,	Bibby Bros. & Co.	Fms. 911 & 138 20.12.36 to 24.12.36	1.3.37
121 *† *Siamese Prince*, M.V.	E. Hardcastle	R. Jones, F. L. Bourgot, R. Dennis.	A. Webster ...	M.L.	Furness Lines ...	Fm. 915 20.5.36 to 27.8.36	21.10.36
*† *Silverwalnut*, M.V.	J. Smith, Lt.-Commr., R.N.R. C. S. C. Cherry	G. H. Morgan, H. J. Dean, W. S. Welford.	A. Johnston ...	,,	S. & J. Thompson, Ld.	,, 27.12.35 to 2.7.36	27.10.36
141 *† *Somerset* ...	C. R. Pilcher	J. Brooke-Smith, H. M. Knight, J. A. C. Knott.	F. W. Dennis ...	S.	Federal S.N. Co., Ld.	Fms. 911 & 138 11.6.36 to 9.11.36	7.12.36
*† *Spero*	W. A. Dossar	C. Hodgson, J. R. Atkinson	... ...	M.L.	Ellerman Wilson's Line, Ld.	Fm. 915 11.7.36 to 7.11.36	16.11.36
*† *Staffordshire*, M.V	P. H. Potter	C. Powrie	... ...	S.	Bibby Bros. & Co.	Fm. 911 23.10.36 to 29.1.37	1.3.37
134 †† *Stirling Castle*, M.V.	C. E. Stuart, R.D., Capt. R.N.R.	F. G. McIver, F. Marriot ...	G. Scurr ...	,,	Union-Castle Mail S.S. Co., Ld.	Fms. 911 & 138 13.6.36 to 1.8.36	6.8.36
020 *† *Stirlingshire*, M.V.	A. Mackinlay	G. Mathieson, E. T. Carruthers	P. B. Allison ...	,,	Turnbull, Martin & Co., Ld.	,, ,, 23.12.36 to 12.1.37	9.2.37
270 †† *Strathaird* ...	J. M. M. Tickell ...	C. Mayne, J. Johnson, G. Melville.	R. B. Knights ...	,,	P. & O. S.N. Co.	,, , 18.10.36 to 10.1.37	18.1.37
277 †† *Strathmore* ...	R. Harrison, D.S.O., R.D., Capt., R.N.R.	G. V. Legassick, G. Melville, K. S. Renshaw.	S. W. Mitchell ...	M.-S.	,, ,, ,,	,, ,, 25.10.36 to 23.2.37	3.3.37
059 †† *Strathnaver* ...	E. P. Lyndon	C. J. Collingwood, A. J. McHatie, G. R. Peters.	P. R. Hobbs ...	,,	,, ,, ,,	,, ,, 3.10.36 to 7.1.37	9.1.37
229 *† *Tactician* ...	A. J. Meek	T. O. Jones, E. Bennet, W. Rennie.	R. Reid ...	M.	T. &. J. Harrison	Fms. 911 & 138 7.9.36 to 16.11.36	23.11.36
241 †† *Tainui*	W. H. P. Jackson ...	... ...	... ...	S.	Shaw Savill & Albion Co., Ld.	... ...	...
081 *† *Tairoa*	S. Oswald	W. G. Burt, J. Jackson, D. Ashley-Emile.	E. Stobbs ...	,,	,, ,, ,,	Fms. 911 & 138 7.10.36 to 25.1.37	9.2.37
021 †† *Tamaroa* ...	W. Dawson	C. A. Meyer, A. Blewitt, J. C. Paige.	P. Maloney ...	M.-S.	,, ,, ,,	,, ,, 9.8.36 to 10.11.36	20.11.36
264 *† *Tanda*	E. T. Pilcher, Lt.-Commr., R.N.R.	E. J. B. Wright, F. O. Colvin, B. W. Dun.	... ...	M.L.	Eastern and Australasian S.S. Co., Ld.	Fm. 915 4.7.36 to 28.9.36	21.12.36
047 *† *Taranaki*, M.V.	G. Williams	D. W. Campbell, A. J. Tillott, A. G. Fisher.	G. Goodsall ...	S.	Shaw, Savill & Albion Co., Ld.	Fms. 911 & 138 22.6.36 to 15.10.36	3.11.36

Name of Vessel.	Captain.	Observing Officers.	Senior Wireless Operator.	Meteorological Instrument Equipment.	Owners.	Logs, Registers, or Records Contributed. 7.12.36 to 6.3.37.	Date Last Return Received
048 †† *Themistocles* ...	C. Wood, D.S.C. ...	R. F. Hamilton, J. G. Lindhardt, J. Downs.	V. Murphey ...	M.-S.	Shaw, Savill & Albion Co., Ld.	Fms. 911& 138 21.9.36 to 16.1.37	27.1.37
*† *Thistleglen* ...	G. A. Whitfield, O.B.E.	T. N. Dalton, A. P. Raine, G. W. Cranmer.	H. F. F. Cornwell	M.	Allan, Black & Co.	Fm. 911 3.10.36 to 2.1.37	12.1.37
*† *Tinhow*	D. I. C. Robertson ...	W. P. Wheeler	... ...	,,	A. Weir & Co. ...	,, 5.11.36 to 27.12.36	25.1.37
161 *† *Titan*	P. J. Pycraft	L. N. Cook, F. Graif, T. Ogylvie.	M. Burke ...	S.	A. Holt & Co. ...	Fms. 911 & 138 1.12.36 to 10.1.37	8.2.37
242 *† *Tongariro* ...	P. B. Clarke, D.S.C. ...	C. H. Fagan, C. W. Roberts, C. E. Enneven.	J. F. McNeill ...	,,	New Zealand Shipping Co., Ld.	,, ,, 11.9.36 to 23.1.37	10.2.37
025 †† *Transylvania* ...	D. W. Bone	R. L. Robertson, B. S. Leiper, A. Colquhoun	J. McDonald ...	,,	Anchor Line, Ld.	,, ,, 13.12.36 to 21.12.36	19.1.37
088 *† *Tudor Star* ...	J. Taylor	F. W. Grist, J. A. Golightly, S. W. Lane.	T. W. Pierson ...	,,	Blue Star Line, Ld.	,, ,, 20.8.36 to 30.10.36	24.11.36
245 *† *Turakina* ...	J. Laird	H. Forster, J. Romsey, W. T. Glassborow.	R. W. Hunn ...	M.	New Zealand Shipping Co., Ld.	,, ,, 30.6.36 to 24.10.36	1.12.36
104 †† *Tuscania* ...	W. B. Rome	D. I. Chamberlin	... ...	S.	Anchor Line, Ld.	,, ,, 20.11.36 to 28.12.36	13.1.37
221 †† *Tynefield*, M.V.	M. Manthorpe	A. D. Lombard	... ...	,,	Hunting & Son, Ld.	,, ,, 4.12.36 to 26.1.37	8.2.37
176 *† *Vancouver City*, M.V.	H. C. Egerton	J. K. Robson, H. David, D. C. MacLeay.	C. S. Watson ...	S.	Sir Wm. Reardon Smith & Partners, Ld.	,, ,, 1.12.36 to 3.1.37	19.1.37
231 †† *Vandyck* ...	P. Symons	J. A. Baragwanath, A. N. Blundell.	S. Hewitt ...	,,	Lamport & Holt, Ld.	,, ,, 25.12.36 to 10.2.37	19.2.37
079 †† *Viceroy of India*	E. A. J. W. Carter, R.D., Capt., R N.R.	J. C. N. Shrubsole, K. H. Cummins, M. A. Trenfield.	W. S. Horn ...	M.-S.	P. & O. S.N. Co.	,, ,, 8.11.36 to 17.12.36	22.12.36
*† *Vienna*	H. Pickering	R. Greenfield, G. Mallory ...	G. Madle ...	S.	L. & N.E. Rly. ...	,, ,, 2.11.36 to 31.1.37	8.2.37
269 †† *Voltaire* ...	... ...	... ...	... ...	,,	Lamport & Holt Ld.	... ...	...
263 *† *Waiotapu* ...	J. Rankine	C. Carter, P. Ryan, H. Peel...	G. Maxwell ...	M.L.	Union S.S. Co. of N.Z., Ld.	Fm. 915 23.4.36 to 15.8.36	23.10.36
004 †† *Waipawa*, M.V.	J. W. Johnson ...	K. I. M. Owen, R. Barns, J. W. Paine.	J. A. Power ...	S.	Shaw, Savill & Albion Co., Ld.	Fms. 911 & 138 13.8.36 to 25.11.36	3.12.36
254 †† *Wairangi*, M.V.	H. R. Gordon	I. Collins, K. Miller, H. Anderson.	P. Parish ...	,,	,, ,, ,,	,, ,, 30.8.36 to 15.1.37	18.1.37
225 *† *Wairuna* ...	A. W. Gray	... ...	... ...	M.L.	Union S.S. Co. of N.Z., Ld.	... ...	...
212 †† *Waiwera* M.V.	J. H. Gaskell, R.D., Lt.-Commr., R.N.R.	R. Grant, R. G. James, — Wildsmith.	W. L. Starr ...	S.	Shaw, Savill & Albion Co., Ld.	Fms. 911 & 138 25.9.36 to 24.10.36	15.12.36
005 †† *Warwick Castle*, M.V.	A. O. Morgan, R.D., Commr., R.N.R. ...	A. J. Hart	J. Hodgson ...	,,	Union-Castle Mail S.S. Co., Ld.	,, ,, 8.8.36 to 29.11.36	3.12.36
056 *† *Westmoreland* ...	E. R. Kemp	C. B. Cathie, T. M. Devitt, P. A. Brendon.	R. Glover ...	,,	New Zealand Shipping Co., Ld.	,, ,, 29.8.36 to 12.2.37	22.2.37
223 †† *William Scoresby*	C. R. U. Boothby, Lieut., R.N.R.	F. C. Freaker	... ...	M.L.	Discovery Committee.	... ...	...
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